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ORIGINAL ARTICLES.

AN EXPERIMENTAL INQUIRY INTO THE CAUSES OF THE VARIATIONS OF PULSE-WAVE VELOCITY AND DURATION OF THE CARDIO-AORTIC OR PRESPHYGMIC INTERVAL OBSERVED IN MAN.

BY A. T. KEYT, M.D.

"In every truth attained there is utility, either at hand or among the certainties of the future."—PAGET.

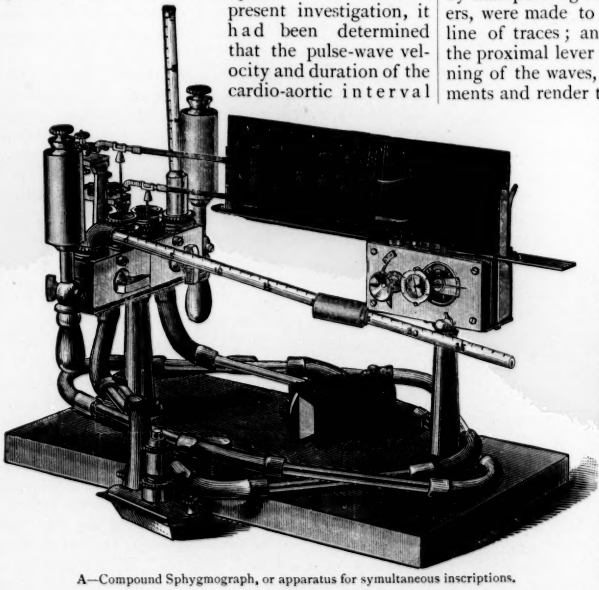
The work of the present essay was devised and prosecuted with the conviction that the points to be established were of interest and importance, and that the graphic method afforded the facility for their successful study.

Our knowledge of velocity of the pulse-wave has all been acquired within a comparatively recent period, and still later are our acquisitions in regard to the interval between the beginning of ventricular systole and rise of the aortic pulse. Previous to the present investigation, it had been determined that the pulse-wave velocity and duration of the cardio-aortic interval were both subject to variations, but the real causes of the variations remained to be determined by experimental inquiry and observation.

If, in the following pages, we make frequent reference to our own previous observations, it is because they are in the line of the present investigation, and have led up to the extension we hope to develope.

The experiments were made with the author's apparatus for simultaneous inscriptions (see cut), which, as known, differs from Marey's, notably in transmitting by water instead of air. This mechanism, on account of convenience and accuracy, was found admirably adapted to the work in hand. Also the author's accustomed method was followed in the measurements of the time intervals, and preparation of the slides for illustration.

Whilst the movements were being written, the chronograph also wrote the time in fifths of seconds. Immediately after an experiment, the slide was repassed, and while halted at selected points, the levers, by manipulating the membrane or tube of the explorers, were made to describe their curves across the line of traces; and it was usually arranged so that the proximal lever would cross at or near the beginning of the waves, in order to simplify the measurements and render the time-relations more apparent to the eye. These lines are synchronous signals cutting the traces at the same instant, and always indicate the exact time-relation to each other of the movements recorded.



A—Compound Sphygmograph, or apparatus for symultaneous inscriptions.

The measurements were carefully made on the slides, by means of a transparent isinglass scale, ruled in 1-100ths of an inch. With this measure and the chronogram, and a magnifying glass, it was easy to compute the time in fine fractions of a second. This was done, and the results written on the slides.

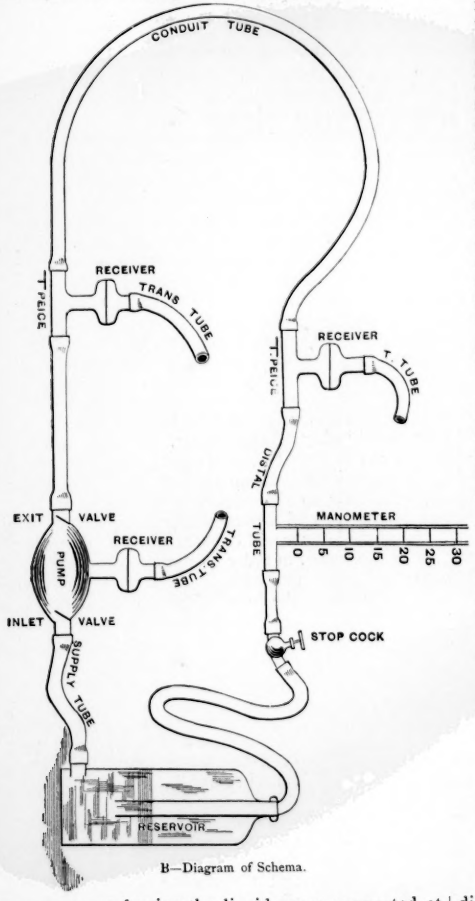
The engravings are faithful reproductions throughout. The lines were photographed on wood, using the glass slides as negatives, and then the engraver, with great care and skill, followed the lines without deviation. So perfect is this work, that the fine measurements

made on the glasses are found to hold good in the reproductions.

CHAPTER I.

EXPERIMENTS ON THE SCHEMA UNDER VARIOUS CONDITIONS, BEARING UPON THE CAUSES OF THE VARIATIONS OF PULSE-WAVE VELOCITY OBSERVED IN MAN.

The schema employed was very simple, yet satisfactory in its working. (See diagram.) The tube



B—Diagram of Schema.

or system conducting the liquid waves connected at either end with one of the horizontal limbs of a hollow T piece. The opposite limb of the proximal T connected with a tube twelve inches long, leading to the egress neck of an elastic bulb or pump. The ingress neck of the pump connected with a tube of convenient length leading to a reservoir. The opposite limb of the distal T connected with a flexible tube, three feet long, provided with a stop-cock one foot from its outer end, and communicating near its middle with a water manometer graduated in inches. The vertical limbs of the Ts communicated with the transmission tubes of the recording apparatus, through the media of circular chambers, each divided transversely by a delicate elastic diaphragm; said receptacles being substituted for the ordinary explorers, and here termed "receivers."

Thus the reservoir supplied the liquid; the pump sent the waves along the conduits; the stop-cock regulated the discharge; the manometer measured the pressure; the T pieces and receivers permitted the waves to act directly upon the recording mechanism, and the latter registered their form and time as they manifested at the points of observation. The exit tube could be placed to discharge again into the reservior, or a separate vessel. The pressure could be raised to any height by working the pump with the exit stop-cock closed, or partially so. A current as swift as desired could be created through the tubes by elevating the reservoir and opening the exit tube placed to discharge at a lower level. Different conduit tubes could readily be placed between the T pieces. The form of the waves could easily be varied by the manner of working the pump. The conditions could be changed at will, and the graphic apparatus would faithfully record the results.

It will be observed that our experiments on liquid waves in elastic tubes differ from Marey's and others —first, in the character of the graphic apparatus; second, in transmitting the waves directly from the interior of the schema; and third, in the close showings and estimates of the time intervals and wave velocities as manifesting under a variety of conditions.

These experiments were essential to the success and completeness of results aimed at in the investigation; and, as will be seen, the results when comparable with those of other experimenters, are sometimes confirmatory, other times contradictory.

PROBLEM I. To determine the influence of tubes of different degrees of stiffness or elasticity on the velocity of the liquid waves sent along their interior.

First experiment: A glass tube, three-sixteenth inch bore, and six feet long, bent in ⊂ form, was placed in communication with the two Ts of the schema. The water in the reservoir was at such level that the pressure in the tube measured four inches by the manometer. The exit stop-cock was open, and the pump worked rythmically by the hand with medium quickness and force. The graphic apparatus in order, with smoked glass in position and chronograph running, the carriage was started, and traces of the waves simultaneously obtained from the two points. Immediately the carriage holding the slide was passed through again, halting it where the upper lever would be opposite, or nearly, the beginning points of the proximal waves, and then striking both levers across the line of the traces. These lines made by the lev-

ers serve to indicate the distance between the beginnings of the proximal and distal waves, and this distance measured[1] on the corresponding part of the chronogram gives the time difference between them. In this experiment, Fig. 1 shows the result. The

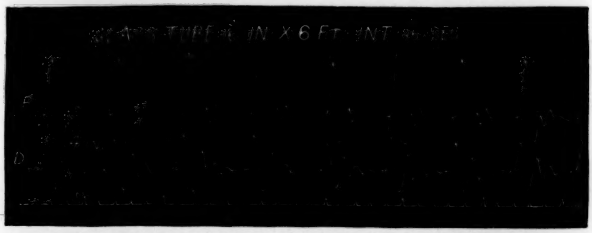


FIG. 1.—Glass tube. 3-16 inch bore, 6 feet long: interval measured at 1-36 second.

retardation of the distal waves on the proximal is seen to be extremely short. It seems to measure about 1½ hundredths of an inch, while the fifths of seconds measure 11 hundredths, which would give a time difference of $\frac{1}{36}$ second, and a wave velocity over the six feet of distance of 216 feet per second.

Second experiment: A thick, firm rubber tube of the same bore and length was substituted for the glass, and the experiment under all other conditions conducted precisely as in the preceding. The result is shown in Fig. 2. The measurement is placed

FIG. 2.—Stiff rubber tube, 3-16 inch bore, 6 feet long; int. 1-27.5 sec.

at $\frac{2}{11}$ of $\frac{1}{5} = \frac{1}{27.5}$ second, and which gives a wave velocity of 165 feet per second.

Third experiment: A softer and more yielding tube of the same bore and length was employed. Fig. 3 shows the result. Formula, $\frac{5}{12}$ of $\frac{1}{5} = \frac{1}{12}$ second; wave velocity 72 feet per second.

[1] Measurements are readily made by hair dividers and a hundredths inch scale, but more conveniently still by the use of a transparent scale of fine divisions.

Fourth experiment: A lighter tube than last, $\frac{1}{8}$ inch bore and same length, employed. Result in Fig. 4. Formula, $\frac{7}{19}$ of $\frac{1}{5} = \frac{1}{8.5}$ second; wave velocity 51 feet per second.

Fifth experiment: A tube of last description was made very soft and lax, and expanded to $\frac{3}{16}$ inch bore, by steeping in gasoline, and then put in experiment. The first pair of waves of Fig. 5, traced under parallel conditions with the others, shows the result. Formula, $\frac{11}{23}$ of $\frac{2}{5} = \frac{1}{5.2}$ second; wave velocity 31 feet per second.

Sixth experiment: Not being able to find in the market tubes of the thinness desired, we prepared one from a strip of delicate rubber cloth, by cementing the edges. This tube, $\frac{3}{16}$ inch bore and two feet long, placed in experiment, gave Fig. 6 as result.

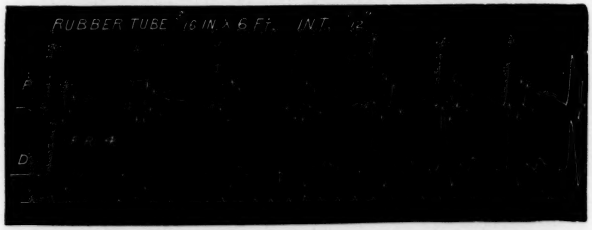


FIG. 3.—Ordinary rubber tube, 3-16 inch bore, 6 feet long; int. 1-12 sec.

Formula, time-difference $\frac{1}{14}$ second for 2 feet, would make $\frac{3}{14}$ second for 6 feet; wave-velocity 28 feet per second.

Seventh experiment: A chicken's intestine, averaging ¼ inch diameter and two feet long, placed in experiment, gave Fig. 7. Time-difference $\frac{1}{8}$ second, equal to $\frac{3}{8}$ second for 6 feet; wave-velocity 16 feet per second.

Eighth experiment: A calf's aorta, averaging ½

inch diameter, and 18 inches long, with the branches tied, gave Fig. 8. Time-difference, $\frac{1}{8.5}$, or $\frac{2}{17}$ second for 1½ feet, equal to $\frac{8}{17}$ second for 6 feet; wave-velocity 12.75 feet per second. This arterial tube was very soft and elastic, but apparently firmer than the chicken's intestine. We shall see further on that size of tube is an important factor of modification.

and tracings taken at various pressures, and many experiments made, but always with the same negative result. Fig. 9 was taken with the chicken gut, before described, at 10 inches pressure. The time-difference measures the same, viz.: $\frac{1}{10}$ second, under the opposite modes of impulsion. Another illustration of this fact is shown in Fig. 11.

FIG. 4.—Lighter tube, 1-8 inch bore, 6 feet long; int. 1-8.5 sec.

These experiments demonstrate in a specific manner, that the velocity of liquid waves in elastic tubes is proportional directly to the stiffness, inversely to the elasticity of the tube traversed. And as bearing upon the rate of pulse propagation in living arteries, they indicate the important modifying influence

This negative result was unlooked for, and is at variance with observations announced by Marey. Nevertheless, in view of our numerous and varied and carefully conducted experiments, to the end of testing this point, we are compelled to accept the fact as shown and stated.

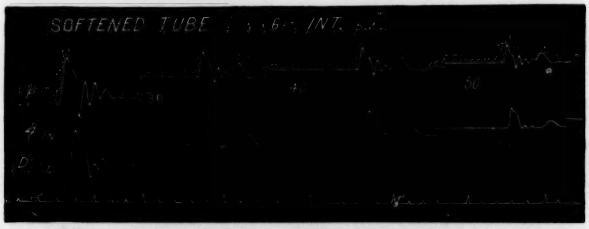


FIG. 5.—Tube softened in gasoline, 3-16 inch bore, 6 feet long; int. 1-5.2 sec.

which the state of the arterial walls as to stiffness or elasticity must exert upon the same. In the next chapter will be given actual verifications from man of a positive ratio between the velocity of the pulse-wave and degree of arterial stiffness.

PROBLEM II.—To determine whether the velocity

Obviously the fact teaches that the rate of pulse propagation is not modified directly by the manner of the heart's action; whether it beats quick, launching a sharp wave, or slow, sending a sloping wave, the pulse-wave velocity along the arteries is all the same.

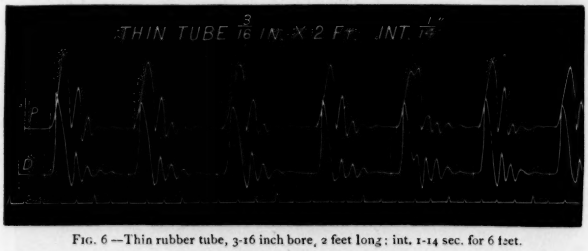


FIG. 6.—Thin rubber tube, 3-16 inch bore, 2 feet long; int. 1-14 sec. for 6 feet.

of liquid waves in the interior of elastic tubes is modified by the mode of impulsion.

Experiments:—Under stated conditions whilst tracings were being taken, the pump for one part of the run was worked with quick. and for another part with slow impulsion. Different tubes were employed

PROBLEM III.—To determine whether the velocity of liquid waves in the interior of elastic tubes is modified by the size of the tube.

It was first sought to solve this problem by the use of ordinary elastic tubing found in the shops, and so a tube ⅜ inch bore and six feet long was put in ex-

periment to obtain results comparable with those of Fig 3. Fig. 10 was obtained. The time-difference is $\frac{1}{12}$ second.

But this experiment and result is not sufficiently conclusive, inasmuch as the larger tube was notably stiffer than the smaller, and this quality, as we have seen, would of itself cause a swifter propagation of the waves. However, as the time intervals in the two tubes were the same, the speeding effect of stiffer walls must have been counter balanced by a slowing effect of larger size.

To more successfully test the point, it was necessary to experiment with tubes of different diameters but of the same thinness and elasticity. Accordingly a tube one-half inch diameter and two feet long was prepared from the same rubber-cloth and in the same manner as the tube 3-16 inch diameter, which gave Fig. 6. An experiment with this tube gave Fig. 11, in which the time-difference is 1-9 second.

It will be noticed that the interval in Fig. 6 is 1-14 second, so this comparative experiment shows that wave propagation is slower in larger and faster in smaller tubes. Compare also Figs. 13 and 14.

To the same end Figs. 7 and 8 may also be compared, for, although the gut was laxer than the artery, the fact that the latter gave a slower rate of transmission shows the result was due alone to the larger size.

From this positive result we learn that, other things being equal, the pulse-wave travels slower along larger and faster along small arteries.

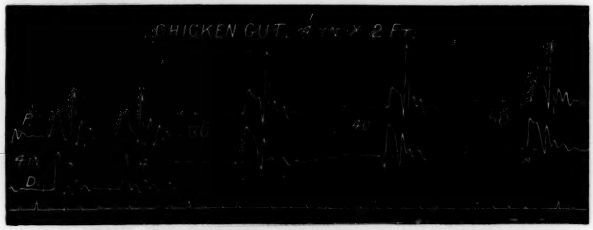


FIG. 7.—Chicken's intestines, average 1-4 inch diameter, 2 feet long; int. 1-3 sec.=3-3 sec. for 6 feet.

PROBLEM IV.—To determine whether the velocity of liquid waves in elastic tubes is modified by a longer or shorter distance from the pump.

For this solution the receivers were placed on a continuation of the 3-16 inch rubber tube, each six feet further from their original positions, and the waves traced at this remoter distance under like conditions as obtained in the production of Fig. 3.

FIG. 8.—Calf's aorta, average 1-2 inch diameter, 1 and 1-2 feet long; int. 1-8.5 sec.=4.8.5 sec. for 6 feet.

Fig. 12 shows the result—time-difference 1-12 second, the same as in figure 3, which represents the nearer distance. However, it appears that the points of the waves are slightly further removed from the beginnings as the distance from the pump increases.

We are informed through this experiment that distance from the heart neither accelerates nor retards the velocity of the beginnings of pulse-waves.

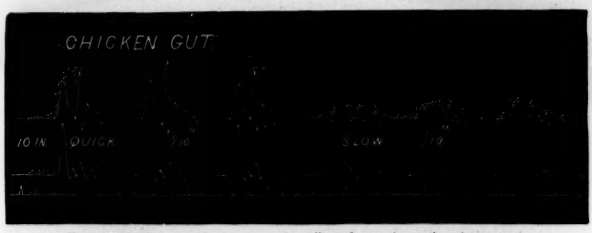


FIG. 9.—Chicken gut, showing negative effect of opposite modes of impulsion.

PROBLEM V.—To determine the influence of different pressures on the velocity of liquid waves in elastic tubes.

First experiment:—Result shown in Fig. 5, where with the softened tube the pressure was successively raised for each wave traced, as shown in the figure. It will be observed that the time-difference is the same at 4, 30, 40 and 50 inches pressure respectively.

Second experiment:—Result shown in Fig. 7, where with the chicken gut, after the first waves taken at the usual four inches, the pressure was successively raised as indicated. The result here is seen to be positive, the time-difference at four inches is ⅛ second, at 30 inches 1-15 second, at 40 and 50 inches 1-18 second.

Third experiment:—Thin rubber tube, 3-16 inch, at different pressures. Result in Fig. 13.

The showing is negative, the time-difference running 1-14 second throughout.

Fourth experiment:—Thin ½ inch rubber tube, at different pressures. Fig. 14 gives the result.

Showing again negative, the time-difference measuring uniformly 1-9 second at 4, 20, and 30 inches pressure, while at 40 inches the interval is really a little longer.

Fifth experiment:—The calf's aorta, before described, employed and traces taken at different pressures. Fig. 15 shows the result.

Intervals respectively 2-17 second at 4 and 10 inches pressure, 2-21 second at 20 inches pressure, 2-25 second at 30 inches pressure, and 2-29 second at 40 inches pressure. Another positive result.

FIG. 10.—Tube 3-8 inch, 6 feet long; int. 1-12 sec. Compares with figure 3.

Reviewing these experiments it is shown, the modifying influence of different pressures is small at best, and requires for development considerable difference of pressure in tubes very soft and elastic. The thin rubber tubes, delicate as they were, failed to make manifest any difference in velocity, while the animal tubes, although with thicker parietes, really more easily yielding, showed increased velocity coincident with marked increases of pressure.

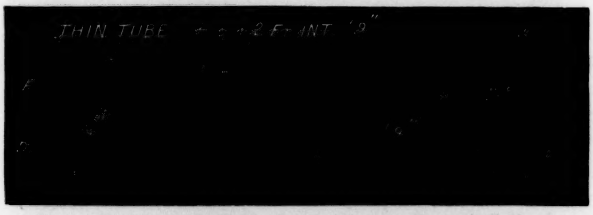


FIG. 11.—Thin tube 1-2 inch diameter, 2 feet long: int. 1-9 sec. Compares with figure 6.

These results have an important relation to the question of influence of blood-pressure on pulse-wave velocity. They indicate that variation of blood-pressure tends to produce variation of pulse-wave velocity directly as the pressure; but in such pressure changes as occur in the organism and mixture of modifying agencies with which they act, it would be expected, in view of these results, that such effect would be of uncertain manifestation and slight when

FIG. 12.—Longer distance from pump; int. 1-12 sec. Compares with figure 3.

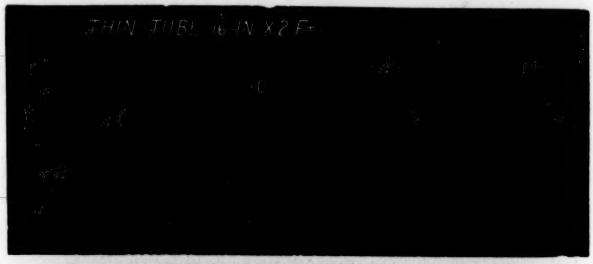


FIG. 13.—3-16 inch thin tube, at increasing pressures; showing negative result.

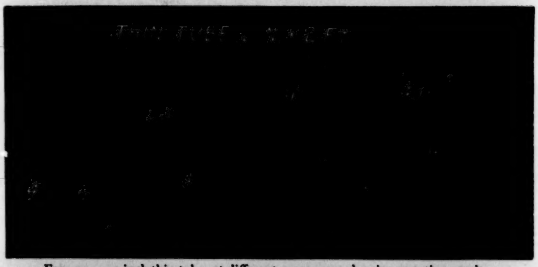


FIG. 14.—1-2 inch thin tube, at different pressures; showing negative result.

FIG. 15.—Calf's aorta, at different pressures; showing swifter velocity with higher pressure.

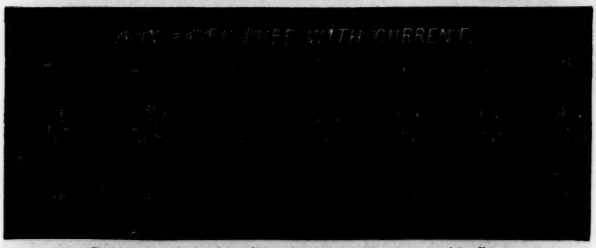


FIG 16.—3-16 inch 6-feet tube, with a current; showing negative effect.

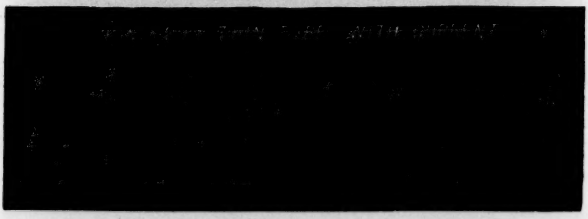


FIG. 17.—Thin 3-16 ineh 2-feet tube, under a current; showing negative result.

observed. According to these experiments the current teaching on this point requires modification.

PROBLEM VI.—To determine whether the velocity of liquid waves in elastic tubes is modified by rapidity of current through the tubes.

Hitherto our experiments have been made with the liquid at rest in the tubes, except as sent forwards at each impulsion of the pump. To test the effect of a continuous current on the velocity of waves implanted upon it, the reservoir was elevated thirty-six inches (the supply tube lengthened accordingly), and the distal tube left to discharge freely into a vessel on the table below; and, whilst thus the water was flowing rapidly through the tube, the experiment was made. Fig. 16 gives the result with the 3-16 inch six-feet elastic tube. The time difference, 1-12 second, is the same as that of figure 3, given by the same tube with the liquid at rest.

Fig. 17 is the result of a parallel experiment with the 3-16 inch 2-feet thin rubber tube. This compares with Fig. 6, given by the same tube with the liquid at rest. It will be observed that the time differences are the same, viz., 1-14 second.

Liquid waves, then, travel along elastic tubes with the same speed, whether the liquid be at rest or freely flowing.

By this we may know that, whether the blood in the arteries flows fast or slow, the velocity of the pulse-wave is not affected.

PROBLEM VII.—To determine whether the velocity of liquid waves in elastic tubes is modified by branches issuing therefrom.

Two rubber tubes, each ⅛ inch bore and 6 feet long, were branched on the 3-16 inch 6 feet tube a few inches below the upper receiver, their distal ends turned into the reservoir. Traces of the waves were then taken with the result shown in Fig. 18, which signals a negative effect.

FIG. 18.—Showiug negative effect of branches on main tube.

Again, the 3-16 inch 6 feet tube was branched on the chicken's intestine, and Fig. 19 obtained at 10 in. pressure, the first part without, the second part with, communication with the branch. It will be seen that the effect is again negative, the intervals measuring 1-10 second under both conditions.

FIG. 19.—Chicken gut, with branch; showing negative effect.

In application of this experiment, in seeking to determine the cause of different rates of pulse-propagation for different articles, we may now exclude as of no effect the different conditions as to branches.

FIG 20.—3-16 inch 6-feet tube, with solution of starch; negative result.

PROBLEM VIII. To determine whether the velocity of liquid waves in elastic tubes is modified by the consistence of the liquid.

A solution of boiled starch, as thick as would flow through the tubes, was substituted for water, and experiments made as with water. Fig. 20 shows the result with the 3-16 inch 6 feet tube, comparable with Fig. 3; and Fig. 21 shows the result with the chicken gut, which is comparable with Fig. 7. Results negative.

From this experimentation we learn that waves are delayed by great obstruction of the tube, and that the delay occurs at the point of obstruction, and is not caused by lessening of the rate of transmission below.

The bearing of these facts upon the influence of arterial obstruction in modifying the time of the

FIG. 21.—Chicken gut, with solution of starch: negative result.

This fact teaches that whether the blood be dense or watery, the pulse wave velocity is all the same.

PROBLEM IX. To determine the effect of obstruction of the tube on the time of the wave below the obstruction.

In Fig. 22, with the 3-16 inch thin tube, the waves

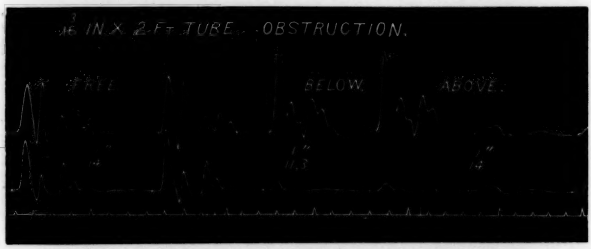


FIG. 22.—3-16 inch thin tube; showing the effect af obstruction of the tube.

were traced first under the usual conditions, and then, whilst the tube was compressed just below the upper receiver, and then again just above. The measurements are 1-14 seconds with tube free, 1-11.3 seconds with obstruction below, and 1-14 second with obstruction above, the receiver. These fairly represent the results of many similar experiments. The delay is small, but always discernable when the passage of the liquid is greatly obstructed below the near receiver. Obstruction above never causes delay. Also, we found the same result when the obstruction was created by plugging the tube so as to leave a very small aperture for passage of the liquid.

pulse wave, is at once apparent.

PROBLEM X. To determine the effect of an elastic pouch communicating with the tube, as an aneurism with an artery, on the time of the wave below the pouch.

A thin rubber bag, easily distensible, was placed in relation with the 3-16 inch 6 foot tube, so that communication between it and the tube could be opened or closed at will. Tracings were then taken, first with the sack shut off, and next with the sack in free communication. Fig. 23 shows the result. The retardation is sufficiently striking.

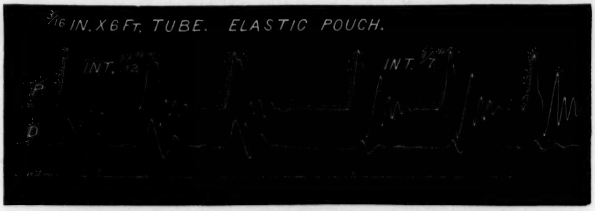


FIG. 23.—3-16 inch 6-feet tube, with elastic pouch.

Next the pouch was placed in the same manner in relation with the chicken-gut, and the experiment proceeded with in the same way. Fig. 24 shows the result, which is negative as to delay.

Again, the pouch was associated with the 3-16 inch thin tube, and in continuity, instead of by lateral

communication ; and to make the experiments strictly comparable a section of the same tubing of the same length as the pouch was interposed for the normal experiment, and that with the pouch above the receiver. First, the pouch was placed closely above the upper receiver and traces obtained shown in the first part of figure 25 ; next, it was removed and, the original connection having been restored, the middle part was obtained ; third, it was placed immediately below the receiver (the section of tube having been removed), and the latter part obtained.

It will be noticed that the interval with the sack above the receiver, and that under normal conditions,[1] without the sack, measure the same ; while that with the sack below the receiver is considerably longer.

In the first experiment the pouch was notably more distensible than the tube and so absorbed the wave to the extent of delaying its time of appearance at the lower receiver ; while in the second experiment the contrast in yieldingness between the pouch and gut was not great, and so no retarding effect was contributed.

The third experiment demonstrates that the wave-delay incident to an elastic pouch begins and ends at the pouch, and that the wave which passes through travels on with undiminished velocity. It shows also in connection with the others that the retarding effect is more easily produced by a sack in continuity than by one with lateral connection.

We appreciate the significance of these facts in their bearing upon the subject of delay of the pulse produced by aneurism.

Having thus experimentally investigated the problems that seemed most pertinent to this branch of our subject, and given somewhat in detail the experiments and results relating thereto, the following resumé of the facts arrived at will now be in order :

1. The velocity of liquid waves along the interior of elastic tubes is proportional directly to the stiffness, inversely to the elasticity of the tube traversed.

2. It is not sensibly modified by the mode of impulsion, a quick wave and a slow wave being transmitted along the same tube in equal times.

3. It is proportional inversely to the largeness of the tube.

4. It is not sensibly modified by different distances from the pump.

FIG. 24.—Chicken gut, with elastic pouch.

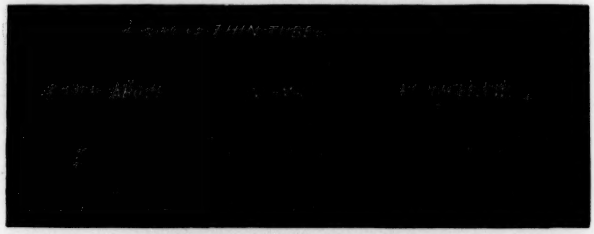


FIG. 25.—Thin 3-16 inch tube, with elastic pouch in different positions

5. It increases with increase of pressure of the liquid in very soft yielding tubes, but in all other elastic tubes, it shows no modification.

6. It is not modified by rapidity of current through the tube.

7. It is not modified by branches connected with the main tube.

8. It is not modified by liquids of different consistance.

9. The distal wave is notably delayed by obstruction of the tube, although its velocity of propagation is not appreciably diminished thereby.

10. The distal wave is delayed by communication with an elastic pouch more easily distensible than the tube, while if the pouch and tube are nearly equally yielding, there is no increased delay ; yet the velocity of the distal wave is not perceptibly diminished from this cause. Hence,

11. The increased delay of the distal wave in arterial obstruction and distensible pouch arises from arrest at the site of obstruction and site of the yielding pouch.

[1] The longer normal interval than those before shown for the same tube is attributed partly to the length of the tube having been increased by so much as the sack and its connections would increase it, and partly to relaxation of the tube from use and soaking in water.

DR. PARRISH'S CASE OF THE PORRO-MÜLLER OPERATION.

The following is the full report of the case discussed in the proceedings of the Obstetrical Society of Philadelphia given in another part of the JOURNAL as furnished by the Secretary of the Society.—[ED.]

SALLIE SMITH, a deformed dwarf, applied for admission to the Philadelphia Hospital in April, 1883. One of the internes placed her among the pauper women of the out-wards of the almshouse. There, all the conditions surrounding the dwarf were such as to contribute to her physical deterioration. The women in that part of the institution are unduly crowded—the ventilation is entirely inadequate, and the food of a character unfit for a pregnant woman. Her presence in those wards was unknown to any of the visiting obstetricians of the hospital until June 15, when Dr. Pauline Root, one of the internes, ascertaining her pregnancy and surroundings, conveyed the information to me. I at once had her transferred to the obstetric wards where she was especially provided for and her condition carefully investigated. She was a native of Philadelphia. She was unable to give her age—although dwarfs usually appear to be older than they actually are, yet from what could be learned of her past life, from evident atheroma of her blood-vessels and from her appearance, I concluded that she must be over forty years of age. Her parents were poor, were born in Ireland, and died in this city during her early infancy. She had been told that her father died of heart disease, and her mother of insanity at the menopause. She did not know how or by whom she was cared for in her early childhood. She attributed her deformities to a fall supposed to have been received when she was a very small child. She was unable to walk until she was seven years of age. Her occupation, from the time she was first able to work, has been that of a house servant. Menstruation began at sixteen years, continued at the usual periods, but rather profusely until the beginning of pregnancy.

She could not recollect ever having been seriously ill. I learned from some of her acquaintances that for a number of years she had been of intemperate habits, repeatedly becoming intoxicated, and indulging in promiscuous sexual intercourse. Her bad habits led to exposure to inclement weather, and, with the influence of cold and damp, doubtless led to the disease of the kidneys, to which I shall again refer.

She was pregnant for the first time. The date of the last menstruation was given by her differently at different times. At one time she would give the 1st of October, and another time, the middle of October as the date when menstruation last ceased.

She felt movement of the child about the middle of February, though she was also uncertain in reference to the date. The *fundus uteri* reached nearly to the ensiform cartilage, and I concluded that the full period of pregnancy would be attained about the 10th or 15th of July,

She was fifty-one inches high, the head small, mind sluggish, and memory defective; yet she was not an imbecile. The clavicles and bones of the upper extremities, though small, presented no special deformities; they did not show the usual rachitic incurvations. The right thorax was very prominent posteriorly and laterally; the left thorax markedly depressed posteriorly and laterally. Both lungs, but more especially the left one, were greatly encroached upon by the deformed thoracic walls. The heart was displaced upward and to the left, its apex being on a level with and external to the left nipple. Pulse 86, of good volume, but intermittent. Bowels moved daily; urination frequent. Urine contained one-quarter albumen, and also granular and hyaline tube-casts. The eyelids were slightly œdematous, but œdema was not recognizable in any other part of the body. The patient complained of frequently recurring frontal headache. At times things seemed darkened to her, and dark specks appeared before the eyes. She had never experienced convulsions, but occasionally had slight fainting attacks.

The vertebral column was markedly curved. The upper third of the dorsal region was slightly convex posteriorly, the lower two-thirds markedly convex posteriorly and also decidedly convex to the right. The lumbar portion was convex anteriorly and to the left. A left anterior lumbar convexity, compensating for a right posterior convexity of the dorsal region. In the erect position, the lower ribs and the crests of the ilia seemed in contact, and the left iliac crest about one inch higher than the right. Posteriorly there was a deep depression at the sacro-vertebral articulation, and the posterior-superior spines were unduly approximated. Externally examined, the sacrum, in its upper two-thirds, seemed directed nearly horizontally backwards.

External measurements with a pelvimeter showed about fifteen centimeters or six inches between the posterior surface of the top of the sacrum and the anterior surface of the top of the symphysis pubis. Normally this measurement is about eight inches. Deducting three inches from the external conjugate of six inches, would have made the internal or true conjugate three inches. The distance between the anterior-superior spines measured twenty-five centimeters, or about ten inches, the normal being ten and one-quarter inches. Between the normally widest portion of the crests of the ilia the distance was a little less than that between the anterior spines—that is, a little less than ten inches, the normal being eleven and one-half inches. The measurement between the crests being less than that between the spines, indicating the pelvis to be rachitic, though it will be seen that the pelvis was not the more usual, typical rachitic one. The external measurements did not indicate decided transverse narrowing of the true pelvis, though internal manual examination did show decided transverse narrowing.

Repeated internal examination showed the promontory to be jutting forward, and the anterior surface of the sacrum to be nearly straight, and directed almost horizontally backward. The symphysis pubis was correspondingly inclined downward and backward.

The oblique conjugate measured three and one-fourth inches, the depth of the symphysis pubis one and a half inches; hence, according to Lusk, deducting three-fourths of an inch from the oblique conjugate, I estimated the true conjugate to be two and a half inches. The transverse diameter of the superior strait was evidently considerably shortened, but I could not satisfactorily determine the degree of the shortening. The antero-posterior diameter of the excavation was taken to be less than the corresponding diameter of the superior strait, and all the measurements of the outlet less than the corresponding ones of the superior strait. The pelvis was diagnosed to be a generally contracted one, with proportionally greater diminution of the conjugates, and the general contraction increasing from above downward, so as to produce a somewhat funnel-shaped pelvis. The vaginal canal was narrow, and the os uteri high up, and the uterine fundus markedly tilted forward. The abdomen was remarkably pendulous.

When the patient first came under our observation, pregnancy seemed to have reached about the end of the ninth lunar month, according to the most probable interpretation of the symptoms, and of the information she gave. The question arose, would it be best to produce a premature labor at the end of the ninth month, with a generally contracted pelvis, and a true conjugate of two and a half or two and three-quarter inches? I decided that should a premature labor be attempted under such circumstances, craniotomy, or some other similarly dangerous operation, would be eventually necessitated, and that the dangers of such operation would be increased by the addition of those incident to the production of premature labor. Delivery with forceps, or by podalic version, seemed out of the question. There was a choice between craniotomy, symphysiotomy, Cæsarian operation, gastro-elytrotomy, and the Porro operation.

In such a pelvis, craniotomy would have been difficult and tardy, and has been shown, especially by Parry, to be attended with a mortality of mothers too large to compete with abdominal section.

I did not prefer the Cæsarian operation, because of its excessive mortality to mothers in European hospitals, and because of the six Cæsarian operations performed in hospitals in this country, all were fatal to the mothers. A condition almost essential to recovery after Cæsarian operation is rarely met with, even after normal deliveries, in hospitals. I refer to sufficient retraction of the uterus. A flabby uterus, after a Cæsarian operation, leads to blood-poisoning and to general peritonitis. The experience of many hospitals, as also *à priori* reasoning, would make the Cæsarian operation of very questionable justification in hospitals, especially in large maternities, and more decidedly still in general hospitals. The Philadelphia Hospital is not only a general hospital, but is also part of a large almshouse. Gastroelytrotomy and symphysiotomy have given good results in the hands of a few operators, the former especially in America, the latter in Europe; but both operations have been performed with comparative infrequency, and the question of their respective merits cannot be determined by the very limited number thus far performed.

I do not desire to discuss *in extenso* here the general question of the relative value of the different operations performed for the relief of advanced pregnancy in very small pelvis. Among the considerations inducing me to adopt the Porro operation, with Müller's modification, were, the smaller mortality to mothers attending this operation in hospitals, and the opportunity it allows the operator of selecting daylight, and of securing the needed assistants.

The patient was placed under the influence of quinine, of Basham's mixture, and of occasional doses of the compound jalap powder. Woollen underwear and proper diet were secured for her. She was isolated from all lying-in women. Her condition did not improve, however, as the time for operation approached, but on the reverse, a persistent œdema of the face, more troublesome headache, and more marked disturbance of vision, with an increasing quantity of albumen in the urine, all pointed to steadily increasing uræmia. The time chosen for the operation was what was supposed to be the end of the thirty-eighth week of pregnancy. A large, well-lighted, well-ventilated room in the Children's Asylum, remote from the obstetric wards, and one that had for years been used as a private parlor, was selected in which to operate, and in which the patient was to remain after the operation. This room was divested of curtains, carpets, and furniture; its walls and floor were thoroughly scrubbed with carbolized water. The room was then refurnished with chair, table, and a new bed. In short, every means was resorted to to improve, as far as possible, the unfavorable conditions incident to so large an institution as the Philadelphia Almshouse.

The members of the obstetric staff had agreed with me in the diagnosis of the patient's deformities, and also as to the propriety of the performance of a Porro-Müller operation. The patient was also kindly examined prior to the operation by Drs. Albert H. Smith, Robert Harris, M. O'Hara, and Anna Broomall. After receiving a full explanation of the nature of the operation, the patient gave her entire consent. The operation was performed on June 30, 1883, with the assistance of Drs. Duer, Keating, Musser, Stryker, Montgomery, Clara Marshall, and Bernardy, all members of the obstetrical staff, and also with the assistance of Dr. McLoughlin, warden of the hospital. There were present Drs. S. D. and S. W. Gross, Ellwood Wilson, J. L. Ludlow, Albert H. Smith, Anna Bromall, J. H. Brinton, Hannah Croasdale, and other physicians. On the morning of the operation the room was carbolized with the spray, but the latter was not used during the operation. All instruments were kept in a two per cent. carbolized solution, and Listerism, minus the spray over the patient was in the different details observed. On the morning of the operation the patient received a general bath, and the bowels were moved by enema. A half hour before the operation she received two ounces of whisky. Dr. Joseph Hearn, one of the surgeons of the hospital,

and an experienced anæsthetizer, kindly administered ether during the operation. After etherization the bladder was emptied with the catheter. An incision was then made in the median line of the abdomen 7 inches in length, extending from two inches above the symphysis pubis to about one inch above the umbilicus, passing to the left of the umbilicus. The slight bleeding from the lips of the abdominal incision was controlled by artery compressors before opening into the peritoneal cavity. The absence of intestine from in front of the uterus was ascertained by percussion before making the incision. The uterus was easily raised from the abdominal cavity.

Owing to the anterior lumbar curvature, and to the length of the incision, it was impossible to completely prevent the escape of intestines. After the uterus had been turned out, a protector made of two layers of flannel, with an intervening layer of protective silk, was placed over the abdomen; the object being to avoid chilling, and to prevent the escape of blood and other fluids into the peritoneal cavity. This protector, when used, was wrung from a warm carbolized solution. The next step was to place around the cervix the wire of an écraseur, and to constrict the tissues in its grasp to such an extent as to stop all circulation of blood through the uterus without cutting through the peritonæum. This step required speed, care and judgment. The liability of a loop of intestine or of omentum to be caught by the constricting wire had to be carefully guarded against. Immediately that sufficient constriction had been secured, a short incision was made with a pointed bistoury through the antero-uterine wall down to the placenta, for the placenta proved to be attached anteriorly. The incision was then rapidly extended from near the neck to the fundus, with a probe-pointed bistuory, guided by two fingers of the left hand introduced into the incision. The blood pent up in the uterus by the constricting wire escaped freely, but did not enter the abdominal cavity. The incision passed to the external surface of, but not through, the placenta. The hand was immediately introduced into the uterus through the exposed membranes at the fundus, and the child quickly turned out, the placenta being in this manœvure detached in main from the uterus. The cord was promptly tied and cut, and the child handed to Dr. Keating. It was asphyxiated when delivered, and presented a very unpromising appearance.

It, however, quickly breathed and cried under the efforts of Dr. Keating at resuscitation. The rapid resuscitation was effected by alternately dipping the child in basins of hot and of cold water. After removing the infant, the uterus, with both ovaries and both tubes, was amputated a half-inch above the constricting wire—this point was about at the internal os. It was then seen that the wire had completely controlled the circulation, and not a drop of blood escaped from the stump of the uterus.

The next step consisted in passing obliquely through the stump two steel pins five inches in length, one above, the other below, the wire. After this a strong carbolized silken cord was passed around the stump, in the line of the wire, and partly tightened. The wire was then cut and removed, and the silk cord very firmly tightened and securely tied. Special care was given to the tightening of this cord and to the tying of a secure knot. The ends of the pins rested laterally on the abdominal walls, and under the ends, on each side, was placed a piece of sheet-lead. The stump was thus secured outside of the abdominal cavity, and rested at the lower angle of the wound. New carbolized sponges on handles were introduced into the peritoneal cavity, down into Douglas's pouch, but the entire cavity was free from blood or other fluid.

The abdominal wound was then closed by deep and superficial silver sutures. The deep ones were introduced so as to include the peritonæum. During the introduction of the deep sutures, flat carbolized sponges were introduced beneath the incision, so as to catch what oozing might occur from the needle punctures. The external portion of the uterine stump was brushed over with carbolic acid, and then invested with lint saturated with carbolized oil. A strip, two inches wide, of dry carbolized lint was placed on the incision; over this a few strips of rubber adhesive plaster were applied transversely, over these a thick layer of carbolized cotton, and over all a flannel binder. The patient was put to bed and surrounded with pans of hot water. Dr. Montgomery took charge of the patient's general condition during the operation, and administered during its performance four hypodermic syringefuls of whisky. He reports that the time taken up in the operation, from the beginning of the abdominal incision until its complete closure, occupied forty minutes. During the operation the pulse ranged from 100 to 128, the greater frequency being during the making of the incision in the abdominal wall, and was probably due to impeded respiration. The constriction of the cervix had no appreciable effect upon the pulse. Soon after being put to bed, the pulse was 132, but in two hours was 108 per minute, and of good volume. The respirations during the anæsthesia became disturbed and imperfect, producing considerable cyanosis, and probably causing increased frequency of the heart's action.

The patient rallied well, as was shown by return to consciousness, by bodily warmth, and a fair pulse. For about sixteen hours her condition seemed very favorable, excepting that the kidneys had ceased to act. At the end of twenty-three hours there was marked change for the worse; the mind wandering, pulse 140, temperature 100° F. An inspection of the dressing at that time, showed some oozing from the stump—perhaps six ounces—but it had then stopped. An additional ligature was placed around the stump, and one of the uterine arteries was separately ligated, the other could not be found; the stump was also brushed over with Monsel's solution. There was no subsequent oozing. That there should have been any loss of blood in this manner was a surprise to me, as the original ligature was so very firmly tightened and secured, and had for a number of hours after reaction so perfectly controlled all bleeding. There was marked atheroma of the vessels

of the stump, as was revealed *post-mortem*. After the twenty-third hour the patient grew progressively worse, became uncontrollable and delirious, had convulsive manifestations, and died in coma. There was no vomiting until twenty-six hours after the operation, and it recurred only once. She experienced but slight pain, and sulphate of morphia was given in slight quantity — ¼ gr. hypodermically, soon after the operation; again ⅙ gr. at the end of eleven hours — and subsequently about the thirty-sixth hour, because of the great jactitation and the difficulty of keeping the patient in bed. The morphine was given hypodermically by Dr. McLoughlin in such small amount that the coma could not have been due to it. Eight hours after being put to bed the urine was drawn with the catheter. Subsequently the catheter was introduced at different intervals, but on each occasion the bladder was empty, and it was also found empty at the *post-mortem* examination. Only three ounces of urine were secreted after the operation. The patient survived forty-two hours.

Dr. John Gillispie made a careful analysis and microscopic examination of the urine secreted after the operation, with the following report:

The specimen of urine from the woman upon whom the modified Porro operation was performed was examined, with the following result:

The specific gravity was 1023; reaction decidedly acid. The urine was of a dirty, yellowish brown color, and contained a large amount of albumen (rather more than one-third).

The amount of urea contained in the urine received by me was 10.5 gr. for the entire amount. Therefore, if only three ounces of urine were excreted in forty-two hours, the total amount of urea excreted would be about fifteen grains.

The sediment contained granular, hyaline, and epithelial casts, renal and bladder epithelium, and granular detritus and blood-corpuscles.

Dr. Wile, the acting pathologist of the hospital, conducted the *autopsy*, and I extract the following from the pathologist's records:

On opening abdominal cavity several slight adhesions were found between the visceral and parietal peritonæum in the region of the surgical incision. Blood-vessels around incision markedly congested. No exudation or other evidences of general peritonitis.

Stomach and intestines distended with gas; spleen small, atrophic.

Left kidney: Considerable displacement, found between sixth and seventh ribs. Somewhat lobular, on surface pea-sized cyst, which extends somewhat into the cortical substance of kidney. Cortex reduced, the seat of parenchymatous, solid, interstitial change.

Right kidney: Position normal; shape altered, considerable flattening on upper surface; hilus very marked; capsule adherent, seat of parenchymatous change. Both kidneys in state of contraction.

Pelvis: One ounce of bloody serum in Douglas's pouch. Peritoneal and subperitoneal tissue the seat of considerable œdema.

Veins around vagina enlarged.

Cervix uteri virginal; orifice round.

Liver enlarged; fatty.

Thorax: On left upper anterior side pleura adherent.

Heart: Left side firmly contracted; right relaxed. Right auricle and ventricle seat of a firmly adherent chicken-fat clot. Left ventricle contained small amount of dark, slightly coagulated blood. Left ventricle markedly hypertrophied. Mitral valve, slight thickening. Papillary muscle considerably hypertrophied.

Lungs: Hypostatic congestion; œdematous.

Cause of death: Heart-clot.

Report of histological appearance of kidney. H. Wile, M.D.

The blood-vessels are for the most part congested, filled with corpuscles, and surrounded by a growth of connective tissue. The uriniferous tubules are found filled with cellular and granular debris. Some contain pigment, the result of slight hæmorrhages. The epithelium lining of the tubules is granular, and in some places in a state of proliferation, indicating a catarrhal process. The growth of connective tissue between the tubules and about the Malpighian bodies is more marked in some places than in others, and the interstitial process may be regarded as fairly established.

A careful measurement was made by Dr. S. D. Lazarus and myself after the pelvic viscera had been removed, with the following result:

Superior strait,	3 inches
Conjugate	
Transverse,	4 "
Right oblique,	3¾ "
Left oblique,	4 "
Oblique conjugate,	3¼ "
Depth of symphysis,	1½ "
Obstetrical conjugate,	2¾ "
Excavation:	
Conjugate,	2¾ "
Transverse,	4 "

Upper four sacral vetebræ directed nearly horizontally backward; lower portion of sacrum and coccyx curved sharply forward.

Inferior strait:	
Conjugate,	2½ inches.
Oblique,	2¾ "
Transverse,	3½ "

A perpendicular to plane of superior strait is nearly horizontal, striking the abdominal wall about midway between umbilicus and top of symphysis.

A perpendicular to plane of inferior strait would strike the upper part of the third sacral vertebra.

The death of the dwarf must be attributed chiefly to the existence of interstitial and parenchymatous nephritis. She had rallied from the shock of the operation. There was no peritonitis, excepting in the immediate vicinity of the incision.

It was too early for septic poisoning to produce death, and there were no indications that such had occurred. The loss of blood had been trifling, and death occurred too soon to be attributable to exhaustion from this cause.

The acute and almost complete suppression of urine, the symptoms after the operation, the symptoms prior to the operation, and the results of examination of the urine and of the kidneys after death, all pointed to the diseased kidneys as the cause of the fatal result to the mother.

It is well to note that union had occurred throughout the entire extent of the abdominal wound. There were adhesions between the small intestines and the parietal peritonæum along the line of incision. The latter fact is of interest, viewed in the light of death in a few instances after laparotomy being attributed to strangulation of the bowel, due to constricting inflammatory bands.

The child was of small size, and died at the end of three weeks, of inanition.

THE SICKNESS OF THE COUNT OF CHAMBORD.

BY A. CHEVALLEREAU.

(From *La France Médicale*. Translated by Chas. H. Hunt, M.D., Stanwood, Iowa.)

Prof. Vulpian, who was called to Frohsdorf during the last sickness of the Count of Chambord, has published in the *Gazette-Hebdomadaire* an account of the sickness, and the reflections on the case with which he was inspired. The affection, which was the death of the Prince, does not resemble anything that can happen to simple mortals; in no classical literature do we find anything near it.

It is this that appears interesting on viewing the principle phrases and following the very remarkable deductions that he has made.

Since two or three years, at the least, the health of the Count of Chambord, which up to that time had been excellent, commenced to change. The Count, however, each day pursued during the greater part of the year the pleasures of the chase, and in spite of an ancient fracture of the neck of the left femur that had produced a shortening and a certain degree of atrophy of the inferior member; in spite considerable development of adipose tissue, he supported better than his younger companions the fatigues of the chase in the mountains.

During some four or five years previous, pressed by the need of diminishing his embonpoint, he was submitted to the system of Banting in all its rigor, and then in a few months he lost fifty pounds of his weight, but at the same time he felt a feebleness and perhaps some digestive troubles. Since this epoch he had been on two occasions seized with intense dyspepsia.

In the month of June, 1882, he made at Marienbad a new essay to diminish his adipose tissue, and against rheumatism, from which he had suffered two or three years previous. He then had some gastric troubles which were considered grave, and which forced him to restrain, in a measure, the medication of Marienbad. The 22d of March last, while at Goritz, the Prince in mounting a carriage was suddenly taken in the superior and external part of the right leg with a sharp pain which was called by the physician "a whip lash," (coup de fouet) and which was attributed to a rupture of the plantaris muscle, or to a phelebitis. The pain after having persisted during many weeks disappeared, and on the 20th of May he returned to Frohsdorf; he weighed the day after 208 pounds.

Such is the history that M. Vulpian gathered regarding the last sickness.

Now comes the history of the strawberries which many political journals have siezed upon to base a case of poisoning. The 13th of last June, the Count ate some strawberries for his dinner which had begun to spoil. The next day he had a slight indigestion with vomiting and diarrhœa. The 15th he was much better and took some fruit for dinner with his friends, and had a new attack of indigestion the day after, but this time with great intensity.

The appetite was altogether lost, and nausea was followed by vomiting, which was repeated a great number of times. He manifested great abdominal pain which was exasperated by the ingestion of aliments or drinks. The symptoms became more and more violent up to June 19th, the day that the Count decided to call Dr. Mayr, Physician of the Hospital of Neuftadt. Weighed the same day; the Count had lost since May 21st twenty pounds of his weight; the following days grew more agravating.

Toward the 24th or 25th of June, Dr. Mayr, who made an examination of the abdomen each day, believed that he recognized the existence of a resisting tumor in the epigastric region, at the right of the median line. There could be seen at the surface of the abdomen in this region a rounded projection.

The 27th of June a consultation was held between Prof. Drasche, of Vienna, and M. Mayr. Both admitted the probability of the existence of a tumor in the region of the stomach; however, they desired to have recourse to the experience of Prof. Billroth, who came with them the 29th. Billroth hesitated between three hypotheses—an affection of the liver, a gouty gastritis, or a cancer of the stomach.

The patient continued to suffer cruelly, and vomited a great number of times in the twenty-four hours. The facial expression was greatly altered, and assumed a hippocratic aspect. It was then that the note of alarm appeared in *L'Union*.

The treatment prescribed by MM. Drasche and Mayr brought at least a little ease. The pains were less sharp, the vomiting less frequent, and the patient tolerated some cold or iced aliments, milk, creams, etc., but the state was not less grave.

The persons who surrounded the Prince thought that it would be useful to have the opinion of a French physician. They demanded Prof. Potaire, who cared for the regretted Prof. Parrot, and would not abandon him for some days; but proposed M. Vulpian, who was accepted.

The 15th of July, M. Vulpian arrived at Frohs-

dorf, and saw the patient immediately. He confirmed with MM. Drasche and Mayr the existence of a tumor seated in the epigastric region, at the right of the median line, not well limited, and having at least the extent corresponding to the greater portion of the palm of the hand. There was a slight œdema, without pain, at the lower portion of the inferior part of the legs, and the tongue was the seat of a commencement of an epithelial proliferation (Muguet).

The 17th the physicians held a new consultation, and felt the tumor very distinctly in the epigastric region.

After this examination, M. Vulpian speaking first by invitation of his confréres, declared that the existence of a cancer of the stomach appeared to him extremely probable, and that if it was so the neoplastic tissue must be developed upon the mucous membrane of the convex part of the stomach, under the form of a plaque, at a certain distance from the pyloric orifice.

He was inclined to admit this diagnosis, upon the presence of a painful tumor in the epigastric region, upon the intolerance of the stomach, upon the nausea and vomiting during fasting, upon the loss of appetite and the special repugnance for food, upon the loss of weight that had preceded the symptoms for some weeks, upon a somewhat cachectic color of the face, and a slight œdema of the inferior members; furthermore, upon the fact that an uncle of the Prince had died of a cancer of the stomach.

M. Vulpian, charged to make known the result to the Count of Blacas, then confirmed the diagnosis of cancer carried by his two confréres, and also added that the cancer was probably seated, but not certainly, in the stomach; also, that the kidneys were somewhat altered, that there was fatty degeneration of the heart, atheromatous lesions of the arteries, and that these conditions rendered the condition more grave and menacing.

The following days the situation amended favorably. New courage was taken at Frohsdorf, although Dr. Mayr created no illusion. In effect, the symptoms returned in the night of the 8th to 9th of August; the feebleness augmented rapidly; the patient had lost sixty pounds since his return from Goritz. M. Vulpian was called again the 20th of August, but when he had arrived the morning of the 24th he learned that the Count had died at 7 o'clock and 20 minutes.

The Countess of Chambord having made known her opposition to an autopsy, it was only during the process of embalming, which was done fifteen hours after death, that the lesions could be seen.

M. Kundrat, professor of pathological anatomy at the University of Vienna, opened the abdominal cavity by a crucial incision that he prolonged to the superior part to retire the thoracic viscera. One could see by raising the epiploon; that the tumor was constituted by the mesentery, very wide, very much charged with fat in this region, and occupying an extent as large as the palm of the hand. The tumor was composed of a large number of hypertrophied ganglions without any cancerous or sarcomatous degeneration. The stomach offered nothing appreciable on the exterior. The lungs were sound. The heart had nothing more particular than a volume a little superior to the normal, and a great flacidity of the pericardium which presented a dead leaf color very pronounced. The aorta was strewn in its internal surface with little fatty spots, and small atheromatous plaques. The œsophagus and stomach were incised successively. The superior part of the œsophagus was entirely sound, but from the union of the superior four-fifths with the inferior fifth, to the cardia, there was seen many ulcerations of a grayish-black color, of a form generally round; near the cardia two large ulcerations occupied nearly all the circumference of the œsophagean conduit.

At the base of the ulcerations the mucous membrane was entirely destroyed; the muscular tunic appeared at these points. The borders of these ulcerations were not jutting, but rather as if they had been cut. The stomach presented the aspect of gastric catarrh. Here and there could be seen, by plaques, injection of small vessels. At the base there was a small tuberosity, some small ulcerations some centimeters from the phylorus, of which one presented the characters analogous to those at the inferior part of the œsophagus. The intestines and liver were normal. The state of the kidneys appeared to indicate a feeble degree of interstitial nephritis.

The viscera were to be replaced, and the physicians were not certain of having found all the lesions that might have existed, and those of which we speak could not be examined with the attention necessary. It was necessary to limit the examination to three or four minutes, for all the assistants. Therefore a histological examination was out of the question. It was upon these data that M. Vulpian wrote a remarkable chapter of diagnostic pathology. He passed in review the causes that would have produced these large and profound ulcerations. One cannot admit that these lesions were produced by a simple catarrhal inflammation, nor a sub-mucous inflammation of the œsophagus. One can invoke a possible atheroma of the arteries, but this supposition has no direct foundation, and like the others is open to objections.

M. Vulpian also rejects the hypothesis of poisoning. The toxic agents that can be invoked, are those which cause ulceration, as arsenic, phosphorus, the soluble salts of mercury, antimony and silver, the caustic acids and ammonia.

M. Vulpian does not admit that the lesions could be stationed exclusively in the inferior part of the œsophagus.

The Count of Chambord never ate alone, and his companions ate of the same dishes; none of them suffered either before or after the beginning of the malady.

M. Vulpian declares that it is incontestable that the disease has not had its departure from the ingestion of a poison. In spite of these denials, in the impossibility of finding a plausible explanation, the hypothesis of a poisoning will be held by many.

Whatever it may be, the history of the disease of the Count of Chambord is most curious, and we are under obligations to Prof. Vulpian, with his great experience and his great clinical sense, for having related it to us.

MEDICAL PROGRESS.

POISONING BY NITRO-BENZOLE OR NITRO-BENZINE.—The old oleum Amygdalæ Amaræ, or oil of bitter almonds, which was recognized as being as poisonous as prussic acid, has been replaced in commerce to a certain extent by a cheap and easy method for manufacturing essence of bitter almonds for flavoring purposes—and which is now called nitro-benzole or nitro-benzine, or by the French Essence de Mirbane. It still preserves its poisonous qualities, but its new name is calculated to remove suspicion on the part of the ignorant; consequently as its use increases in flavoring pastries, etc., cases of poisoning are becoming more common. Ziemmsens Handbook gives forty-two cases collected by Boehm, fourteen of which resulted in death. Drs. Van der Mursch and De Visscher report, in the *Annales de la Soc. de Gand* for August, the details of an autopsy made upon a child two years of age, which died in five hours after taking half of the contents of a bottle containing ten grammes of nitro-benzine, procured by its mother for making pommade. The symptoms were first, somnolence, followed by agitation, delirium and convulsions—no disturbance of the digestive organs. The autopsy showed marked rigor mortis three days after death, a decided hyperæmia of the lungs, no alteration of the alimentary canal, the contents of the stomach were of a milky whiteness with the odor of bitter almonds. The arachnoid membrane covering the brain was extremely congested, and the white substance of the cerebrum and cerebellum was markedly "sanded" (sable). There was a slight amount of serum in the lateral ventricles.

A coffee spoonful, according to Muller, nine grammes according to Schenk, of the essence of mirbane is sufficient to kill an adult. The absence of odor except from the contents of the stomach, would seem to favor the ideas of Letheby, who considers the nitro-benzine as reduced in the blood to aniline and picric acid, and that the symptoms of poisoning are those of aniline.

ON THE PARTIAL REGENERATION AND REFORMATION OF THE LIVER. The *Archives Italiennes de Biologie* contains two articles by Prof. Tizzoni and Dr. Colucci respectively, which embody some interesting experiments on this subject. Prof. Tizzoni, in experimenting upon the spleen of a dog, accidentally wounded the inferior border of one of the lobes of the liver. Six months later he made an autopsy on the animal, and found the greater epiploon adherent to the liver at the seat of injury, which was repaired in greater part by a neoformation having all the macroscopic characters of the organ. The neoformation extended along the epiploon in the shape of a triangular tongue, 20 mm. long, 5 mm. broad and 2 mm. thick at its base, by which it was attached to the liver at a point corresponding to the lesion. This triangular neoformation had in its center a large blood vessel provided by the epiploon and with numerous collateral branches. About this vessel a tissue was found, giving all the characteristics of normal liver tissue. A careful histological study of the regenerated portion as well as of the neoformation, gave the following results:

1st. The hepatic cells respond to mechanical stimulus by a very active proliferation.

2nd. The reaction of these elements is not confined to the point of irritation, but extends to a certain distance beyond, diminishing in activity in proportion to the distance from the center of irritation.

3rd. This multiplication may produce, under certain circumstances, a regeneration of the liver, where the viscus has been wounded, as well as a neoformation of hepatic cells and biliary conduits beyond the normal limits of the liver.

4th. The experimental neoformation of the liver was accomplished in the same manner as in its embryonic development.

The further results of Prof. Tizzoni's researches are not given here, as they relate to histological details, the study of which in the article itself will best repay those working in the same field, except to say that, contrary to the condition which is found in partial regeneration of the spleen, the connective tissue of the epiploon closing the wound of the liver takes no part in the neoformation, other than in the formation of the blood vessels; it represents simply a stroma, in which the neoformation spreads itself.

Dr. Colucci gives the results of experiments performed on some nineteen subjects—white rats, including two guinea pigs, neither of the latter surviving the operations long enough to be properly utilized. The animals were killed at the end of eight, twenty-nine, thirty, thirty-four, and thirty-nine days, and the article is based on the examination of thirteen wounds made on different parts of the liver by the use of scissors and of the knife, by simple incisions and by excision of cuneiform pieces. These thirteen cases then were followed in two cases by fibrous cicatrices, in one of which a cyst filled with caseous material was found; in one case by incomplete regeneration, and in ten cases by total regeneration. His summary states:

When in white rats, one or more of the hepatic lobes are removed, the remaining portion hypertrophies to the extent of the volume of the liver itself.

This hypertrophy is due in the beginning to the enormous dilatation of the blood vessels.

This dilatation facilitates the emigration of the white corpuscles, which organize into vessel-forming cells, and, by direct adaptation, into hepatic cells.

After the lapse of about a month these hepatic cells have reached the ordinary size, the nucleus being nearly a third larger than in the normal liver tissue, the protoplasm remaining finely granular, and not containing much pigment, thus being readily distinguished from the pre-existing hepatic cells.

When cuneiform pieces were excised from the liver, union took place by means of a fibrous cicatrix, sometimes uniting the lips of the wound, but more frequently simply investing it, the lips remaining separated.

When simple cuts were made with a sharp knife, regeneration of the hepatic tissue followed, earlier and more constant on the convex surface, and later on the concave surface.

The best conditions for complete regeneration are: (1) contact of the lips of the wound; (2) a moderate inflammatory process; and (3) the non-inclusion of the epiploon in the wound.

THE ACTION OF IODOFORM IN DIABETES MELLITUS.—Prof. Bozzolo (*Archives Italiennes de Biologie*), after satisfying himself of the beneficial effects of iodoform in several cases of diabetes mellitus, caused a series of laboratory investigations to be conducted by his laboratory student, M. Balp, to determine the influence of iodoform upon the number of red globules, the quantity of hemoglobine, and the arterial tension. These observations were conducted with great care, and by the use of the most approved physiological apparatus. In two cases of diabetes he found that iodoform in large doses—that is, one to two grammes—diminished the elimination of sugar and the quantity of urine; that it diminished the number of red globules and of hemoglobine, and that it diminished the arterial tension. To explain the diminution of red globules, he cites the theory of Binz, that the iodoform, through the iodine which disengages itself, as in iodate of sodium, destroys the red globules, and produces partial coagulations. If this be the fact, the diminution must be progressive, and patients using iodoform would become rapidly anæmic, which anæmia has not been observed so far in cases under this treatment. The diminution of arterial tension would explain the effect of the drug in reducing the quantity of urine, in eliminating glucose, and on the quantity of globules and of hemoglobine; and Prof. Bozzolo inclines to the view that the iodoform exerts its influence on the nerve centers, and especially upon the vaso-motor center.

A FŒTUS WHICH REMAINED FIFTY-FIVE YEARS IN THE BODY OF ITS MOTHER.—M. Suppez, in a communication to the Academy of Sciences (*La France Médical*, Sept. 4), made some interesting remarks relative to the prolonged retention of fœti. He referred to such remarkable instances as that of Toulouse, 26 years; that of Sens, 28 years; that of Pont-a-Mousson, 30 years; that of Joigny, 31 years; that of Seinzel, 47 years; and finally, that of Quimperlé, 55 years, the specimen of which he presented. He gave two theories to account for this remarkable preservation; the old one of petrifaction—the fœti so preserved resembling fossils. The immediate principles of their bodies being replaced molecule by molecule by a gypsum, a silicious or calcareous substance, in such a manner as to change their substance without affecting their form or volume, Billement affirmed that the fœtus of Pont-a-Mousson was petrified. Bartholin, who saw the fœtus of Sens in the cabinet of curiosities of Frederick III, King of Denmark, affirmed that it was as hard as a stone. The second theory was that of progressive dessiccation. Neither the fœtus of Seingel, of Joigny, or of Quimperlé, were petrified, and the petrifaction of those cited remains a contestable statement. The fœtus of Quimperlé was not dessiccated, and so a third theory must be broached to explain not only why a dessiccated fœtus should be preserved for so long a time, but also why it should be preserved when not dessiccated.

The case in question was that of a woman who became pregnant at 28 years of age, and who enjoyed good health up to the age of 84, when she was admitted to the hospital of Quimperlé, and died in three weeks' time. The autopsy showed a tumor independent of the uterus and along the course of the right ovarian tube, formed by a cyst whose walls were extremely hard, with an irregular mamillated surface. On opening the envelope which appeared to belong to the mineral world, a child was found which had not undergone any alteration; it presented the ordinary attitude of the limbs flexed upon the trunk, the head bent upon the chest. The two pupillary membranes were perfectly developed, testifying to an age of six to seven months. The cutaneous covering, the superficial organs, the viscera in the great cavities of the body, all the muscles and all the soft parts had preserved their consistency, their pliability and their normal color.

To account for this condition of things, M. Sappez, recalled the demonstration of Pasteur where he showed a balloon (toy) containing pure air and the blood of a healthy dog, and another containing fresh urine which had been preserved for forty-eight days in a stove at a constant temperature of 30° C. without undergoing any change. Here, nature had thrown an envelope around the fœtus which contained neither air nor germs and the putrescible material was thus enabled to resist putrefaction.

EFFUSION OF BLOOD INTO THE CAVITY OF RETZIUS CONSEQUENT UPON A MUSCULO-ARTERIAL RUPTURE OF THE ABDOMINAL WALLS.—Prof. Heron Gripet through M. Polaillon has presented the report of an interesting case of this rare accident to the Société de Chirurgie de Paris (*Bulletin et Memoires*, Sept. 5). The patient while riding on horseback, threw his body back forcibly to protect himself from injury consequent upon the stumbling of his horse which fell upon his fore-knees, recovering himself quickly. A sharp pain in the abdomen and back caused him to dismount, and he had to be carried in a litter to his residence. Medical aid being summoned, he was found to be suffering from an enormous soft tumefaction of the scrotum, black and as large as the head of a child, abdomen enlarged, tympanitic above, dark below, sharp pain above Poupart's ligament corresponding to the left epigrastic artery. The bladder was evacuated by the catheter of normal urine; no blood. An enormous discharge of blood had taken place under the skin of the scrotum, in the perinæum, in and beneath the walls of the abdomen. Dullness was limited below by the ligaments of Fallopius, above by a horizontal line a little oblique from left to right, nearer the umbilicus than the pubis. The bladder was completely surrounded by the discharge, compressed and displaced so as to be prevented from performing its functions. The general condition presented no fever, no vomiting, no peritonitis, but syncope on the slightest movement. Under proper treatment of support and pressure, the results of the discharge of blood into the scrotum were relieved

rapidly, but for a long time there remained a resisting surface on the abdomen, most marked on the left side (the flanks were at no time affected). The only accident which occurred during the progress towards recovery was a cystitis resulting from a small prostatic abscess, caused by difficulty in using the catheter from the first; on the fifteenth day the urine passed spontaneously. Obstinate constipation was a marked symptom. In four months' time the patient was enabled to go to the country, walking with a cane, and in a markedly bent position. A year after the accident no trace remained.

One of the interesting appearances which developed as the patient improved was the intense and extensive ecchymotic discoloration; it resembled a pair of bathing drawers, covering the abdomen, the upper part of the thighs, following on the left side the sheath of the femoral vessels to the knee, and was very black about the scrotum and perinæum. It surrounded the anus laterally but not posteriorly.

That this discharge was due to a rupture of one or more arterial branches is argued from the fact of its rapid formation; the acute pain seated along the course of the left epigastric artery; and the descent of the ecchymosis along the sheath of the left femoral vessels, while on the right side the ecchymosis was limited by Scarpa's triangle. The arterial rupture was accompanied by a laceration deeply situated, of muscle fibers on the right side. The discharge extended from the sheath of the muscles posteriorly into the cellular tissue surrounding the bladder, distended the cavity of Retzius, compressed the bladder, spread into the penis, scrotum, perinæum, and surrounded the rectum. That it was under the peritonæum and not in its cavity is shown by its immediate spread to the perinæum, its limitation to the sides and anterior portion of the anus, and the absence of vomiting, fever, etc.

In presenting Prof. Gripat's case, M. Polaillon remarked that the question might arise, was not the perinæum injured by striking against the pummel of the saddle, and thus account at least for some of the symptoms present; but one could not readily imagine an injury of that extent which would leave the urethra intact. One point was obscure in the paper—the legs were completely motionless for several weeks, which could not be accounted for simply from the symptoms given of the discharge of blood. The patient at the time of the accident felt a sharp pain, not only in the abdomen but also in the back, which M. Polaillon considered as due to a laceration of the psoas muscle. When the patient was quiet his back was comfortable, but when his thighs were moved he suffered the same sharp pain as at the time of the accident, which indicated lesions involving the nerves of the lumbar plexus.

ABSENCE OF THE SPLEEN.—Dr. Isidor Mehrer, in a communication to the *Wiener Medicinische Presse*, Sept. 2, reports that in a judicial post mortem made upon a woman 45 years of age, who had committed suicide by hanging, he was unable after a most careful examination of the abdomen and thorax, to find the slightest trace of a spleen, its accustomed place being occupied by the small intestine. The other organs were normal and properly developed, the liver alone being a little enlarged. The woman was healthy during her lifetime.

A CASE OF ATROPINE POISONING.—Dr. Sink (Memorabilien Zeitschrift für and p. Aerzte) records a case in a sixty-seven year old woman, who was very decrepit, and suffered from iritis in the left eye. She was treated at the eye clinic by using 5 drops of a 1 per cent solution of atropine upon the conjunctiva every 4 days. The second application produced dizziness, unsteadiness of gait and dryness of the throat. The third application had the same effect, but the symptoms passed off in a few hours. After the fourth application, however, she fell senseless in the street on her way home from the clinic, was picked up by a policeman and taken to the hospital; where the register gave the following record: Patient small, scoliokyphotic, very decrepit, weight 35kg., constant delirium—makes movement with the hands as if to bring a glass of water to the mouth, or handles her clothes as if sewing, Pulse beat 180–190 to the minute, respiration somewhat accelerated, skin perfectly dry, tongue dry and cracked, voice harsh and unintelligible. The iris of both eyes dilated to the maximum.

There soon followed constant and powerful jactation. She was admitted 11 A. M.; it was 4 P. M. before she became quiet enough to allow of the use of the thermometer, which registered 38.4° C, at which time she was constantly calling for water, and complaining of the hoarseness and dryness of the throat. Towards evening she came to herself and discovered where she was. She refused all nourishment, but drank water eagerly. Pulse, 150 to 160. Pupils still fully dilated. The next day, after sleeping restlessly, the pulse had fallen to 130; the temperature was 38.2° C; jactation entirely gone. She complained of great weakness; on the 3rd day she left her bed; temperature normal; pulse 110; skin moist; pupils moderately dilated, but still very sluggish; the voice had recovered its tone. In the course of the day the appetite returned, and she was discharged. She has since fully recovered.

Among the points of interest in this case, is the elevation of temperature, which is so rarely observed in cases of atropine poisoning, that a lowering of temperature is by most authors considered as a constant symptom. The choreic movements are also peculiar. The reporter is careful to state that there were no anæmic symptoms noticed.

WOUNDS OF THE THORACIC DUCT. — The attention of Dr. E. Boegehold (Archiv für Klinische Chirurgie) was called to this subject in assisting at the removal of a large carcinoma from the neck of a man, where during the operation the throacic duct was wounded at its entrance into the left jugular vein. The rarity of this accident led him to look up the literature on the subject to obtain answers to certain questionable points, viz: 1st. Is it possible to wound the thoracic duct alone, or is it necessarily wounded with other organs through the lesion of which death might follow? 2nd. What are the con-

sequences of a wound of the thoracic duct; and, 3rd. Are wounds of the thoracic duct curable? It is easy to see that to find these answers he was obliged to reach through a wide range of literature, and accordingly he has brought together in his paper a large number of observations in greater or less detail as suited his purpose, which become very valuable for future reference.

The first question, that wounds of the thoracic duct alone can occur without wounds of other parts that are dangerous to life, is answered in the affirmative. It is possible under favorable conditions to wound the duct from behind or from the side. Punctures or short wounds that pass by the side of the vertebræ, can produce this lesion, but he found no other cases cited, except his own, where wounds occurred in the operation of extirpating large tumors. In answering the second question, what are the consequences of wounds of the thoracic duct, he found a number of cases where complete obliteration or compression of the duct were without symptoms. It would seem that collateral branches were very quickly established to lead the passage of the chyle into the blood current. There were two dangers that followed the wounding of the duct where the flow of chyle was not checked, viz: compression of the lungs and heart. This leads to the answer of the third question, are wounds of the thoracic duct curable, which he answers by advising an opening into the pleural cavity for the relief of its viscera from compression, and the use of well selected diet to compensate for the loss of the chyle. The closure of the wound itself occurs by compression and retraction of the walls of the vessels during respiration, by the compression which the surrounding tissues exert, or by the outpouring of fibrin. A number of experiments go to prove that the walls of the duct are capable of strong contractions, as has been shown by stimulation through the electric aparatus two hours after death. The lymph or chyle pressure in the duct is not high, being put as equivalent to 9–15 millimeters of mercury (Weiss), or 8–10 millimeters (Luwig and Noll.)

NEW INSTRUMENTS.

A NEW DECAPITATING INSTRUMENT.

The *Boston Medical and Surgical Journal*, September 27, gives a wood cut with description of a blunt hook, similar in form to the blunt hook used in obstetrical operations for breaking the neck of the child in difficult labor, and by repeated twistings for severing the head from the body. This blunt hook, however, has been modified by Dr. Robert B. Dixon by the addition of a concealed knife, the blade of which is exposed to the extent of one-fourth of an inch on the inner side of the hook, by simply turning a thumb-screw in the handle. By this means, after breaking the neck of the child by the blunt hook as ordinarily used, the point of the instrument, being protected by the forefinger, the blade is made to complete the operation by severing the head from the body.

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THE EDITOR of this JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information, should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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SATURDAY, OCTOBER 20, 1883.

EXPLANATION.—During the many years of our connection with the editing and publishing of medical periodicals, we have neither found it necessary to make frequent apologies to our readers, or to indulge the habit of attributing every blunder to the "Printer's Devil." But in the management of our present enterprise we have encountered two annoying difficulties. The contract with the printer includes the furnishing of paper, composition, presswork, folding, wrapping, and mailing of the JOURNAL, and he has faithfully endeavored to fulfill his contract. But his first arrangements for wrapping and mailing proved so defective, that it was the principal cause of making each number reach its readers a week after the date of its issue. This evil had been gradually overcome, and we were anticipating the pleasure of commencing the second quarter of the JOURNAL on time, and in reasonably good order, when to our astonishment we found, soon after the issue of the thirteenth number, that it had been actually printed and mailed with many of the errors marked in the second reading of proof uncorrected, and the first column on page 400 just as it was originally set up by the compositor, without so much as having had an inverted letter turned right end up. Yet every line of it had been read by the proof-readers, and the errors marked for correction. A new foreman had been placed in charge of the printing department only a few days previous, and doubtless allowed this particular column to go into his form uncorrected, by mistake. But measures have been taken which, it is thought, will render another such blunder impossible, and also secure a more faithful correction of all errors marked in the several proof-readings.

DEATHS. — Professional circles throughout the whole country have been startled by the unexpected death of Surgeon General Crane, of the United States Army. A brief but interesting obituary notice of him will be found in another column, under the head of *Necrology*.

The political press have already named several prominent members of the medical corps of the army as probable successors to the high office so suddenly vacated. Among the most prominent of those named are J. S. Billings and Surgeon Murray.

ON the 4th inst. Dr. Wm. H. Byford, Jr., died in Minneapolis, Minn., in the 33d year of his age. He was the son of Prof. W. H. Byford, of this city, so well and favorably known as an author and teacher in the department of gynæcology. The deceased was a young man of good natural endowments, and an apt scholar. His brief professional career was much interferred with by ill health, and he finally succumbed to that fell destroyer, pulmonary phthisis.

ON the 14th inst. Dr. Brockholst McVickar, one of the oldest physicians of this city, died in Buffalo, N. Y., where he had been spending some time in feeble health. Dr. McVickar had been an active and highly respected practitioner in this city about forty years, and held several public positions of honor and responsibility. He died at the age of 73 years.

THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF VERMONT.—It is expected that Mr. John P. Howard will make another liberal bequest to the University, part of which will be devoted to the construction of a new building for the Medical Department.

MEDICAL HONORS.—Drs. F. S. C. Grayston and R. F. Blount, two prominent medical practitioners in Indiana, have recently been complimented with the honorary degree of Master of Arts, by the Butler University, at Indianapolis.

M. THUILLIER, a scientist, and member of the French Cholera Commission, sent to Egypt under the direction of M. Pasteur, to investigate the cause or causes of the cholera prevailing there, has died from the disease contracted in the cholera hospital of Ghedid, in Alexandria.

EDITORIAL CHANGE. — Dr. Frank Woodbury has become the editor of the *Philadelphia Medical Times*, in place of Dr. H. C. Wood, retired. Dr. Woodbury is well qualified for the position to which he has been promoted.

YELLOW FEVER. — This fever is reported to be still prevailing severely in many of the cities of Mexico, particularly at Mazatlan, Manzille, San Jose, Costa Rica, Nicaragua, Acapulco, Zucatula, Manzanillo, Corrientes, and San Blas. Its tendency to extend northwest is such that precautionary measures have been taken by the Surgeon General of the Marine Hospital Service, to prevent its being carried into Arizona.

A few cases continue to occur in the Navy Yard at Pensacola, and at the Quarantine Station on Ship Island.

AMERICAN CLIMATOLOGICAL ASSOCIATION. — A society organization with this name was organized in New York, September 25th, with the following officers: President, A. L. Loomis, of New York; Vice-Presidents, F. H. Knight, of Boston, and W. H. Geddings, of Arkansas; Secretary and Treasurer, J. B. Walker, of Philadelphia. The next annual meeting is to be held in Washington the first week in May.

SOCIETY PROCEEDINGS.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated meeting October 4th, 1883. The President, R. A. Cleemann, M.D., in the chair.

Dr. W. H. Parrish reported a

PORRO-MULLER OPERATION,

and exhibited the uterus, the abdominal incision (which had united) and surrounding wall, the stump of the cervix in position at the lower angle of the wound, the entire external genitals and mons, including the vagina and bladder. The ureters were found entirely free.

Dr. R. P. Harris remarked that this was the only Porro operation that had been complicated by diseased kidneys. The case was an unfavorable one, in consequence of this complication. The albuminous character of the urine was supposed to be due to mechanical interference by the enlarged womb, but, unfortunately, this was not so. The bad habits of the patient had led to a general disease of the arteries, as well as of the kidneys. The former were atheromatous. The Porro-Muller operation has been performed thirty-four times; the unmodified Porro, eighty-two times; total, one hundred and sixteen cases, of which forty-eight per cent. have been successful in saving the lives of the mothers. When the pedicle or stump is dropped, it ceases to be a Porro operation. Of thirteen cases in which the stump has been dropped, eleven have been fatal. Dr. Godson is writing a full history of this operation including the many experiments which have been made on animals, to determine the best method for each step of the operation and the causes of death. Dr. Porro

has saved four out of five cases in his own hospitals. In the Milan Hospital nine were saved out of twelve. In Germany the success has been poor, but in Austria better.

Dr. O'Hara asked why the Porro operation should be modified, when it had been so successful in the hands of the originator.

Dr. Harris: Dr. Muller was called upon to operate in a case in which the fœtus had been dead for some time and was putrid, the uterus being distended with gas. To prevent any septic matter finding its way into the abdominal cavity, he enlarged the abdominal incision, lifted the uterus out of the abdomen, and used cloths around it and over the wound before incising the uterus. This patient recovered. The mortality this year has been very slight.

Dr. E. E. Montgomery had been associated with Dr. Parrish in this case as one of the hospital staff, and at first thought the case should be allowed to go on to full term before operating, and that Cæsarian section or laparo-elytrotomy, as practiced by Dr. T. G. Thomas, should be the selected form of operation; but Cæsarean section has been very fatal in large hospitals, doubtless because it is generally a last resort after the patient has been long hours in labor, and for that reason is dangerous. But if a large drainage tube was passed through, entering at the abdominal incision and out of the vagina, and a constant flow of antiseptics kept up, a good condition might be secured.

During the operation a few modifications suggested themselves. One of these was to divide the cervix uteri by a V shaped incision, the peritoneal surfaces being united over the wound, a flat Peaslee drainage tube being introduced and the stump dropped.

Dr. Harris tells me that Schrœder has tried this, and that it has been done twice by ———, once successfully.

He thought the wire of the ecraseur passed around the cervix before removing the child, a source of danger to the latter, as well as being likely to embrace a loop of intestine.

Dr. Harris, in criticising the plan of dropping the stump, called attention to the fact that the portion of uterus embraced in the ligature is not a pedicle; it is a stump, and will continue to contract, and oozing of blood, or even profuse hæmorrhage is liable to occur. It has been found impossible to prevent this by any form of ligature that has been tried. If the stump is dropped this hæmorrhage or oozing will take place into the abdomen, and will be a certain cause of death. Dr. Isaac E. Taylor came near success, but his patient died from thrombosis on the twenty-sixth day, during an attack of phlegmasia alba dolens. It would be very desirable to avoid the dragging on the abdominal wound.

Dr. Montgomery gave a short resumé of the cases treated by dropped stump, and the causes of death in them.

Dr. Parrish remarked that the disease of the kidneys was undoubtedly the cause of death, the implanting of the acute condition caused by pregnancy upon the previous chronic disease. He also spoke of the possible deleterious effect of the ether upon the system laboring under such a condition of the kidneys. It made the administration of ether in such cases a very serious matter.

Dr. Parrish also exhibited specimens from a case of

EXTRA-UTERINE PREGNANCY

and made some remarks upon the history of the case. He had attended the patient in her first labor seven years ago. She was a brunette of very restless and active habits and disposition and was quite uncontrollable. She was up and about her house a few days after her labor, and the result was sub-involution which persisted until her death; during the interval she had passed out of his care, and had been subjected to local treatment, including the use of sponge tents. There had developed pelvic inflammation, and later she was troubled with frequent micturition and dysmenorrhœa. She afterwards came under his care again for the treatment of these troubles, and on one occasion he had applied leeches to the cervix and gave her positive orders not to leave her bed, but festivities were going on, and she went down and assisted in making ice cream and cake, and later in eating them; this indiscretion was followed by a second metritis. He afterward treated for the dysmenorrhœa by numerous minute punctures of the cervix and the application of tincture of iodine, and the introduction of a sponge tent. The next period was not so painful and the second was missed. He told her she was probably pregnant, but two weeks afterward a slight flow occurred, and fearing an abortion he advised rest in bed. She refused an examination and would not be quiet; the flow continued but did not increase, but there was pain in the pelvis in addition. Eleven days after the flow commenced a sudden attack of intense pain occurred, the patient was completely prostrated, and was carried up stairs. As he was not at home, Dr. O'Hara was called in and used morphia hypodermatically. He found on examination a mass in the posterior part of the pelvis; the uterus was pushed forward against the pubes. He diagnosticated rupture of a fallopian pregnancy cyst and internal hæmorrhage, and gave opiates to relieve the intense pain. The pallor and exhaustion became more pronounced, and death occurred thirty hours after the first symptoms. Other physicians who saw the patient did not agree with Dr. Parrish in his diagnosis. The autopsy revealed no recent peritonitis; there was blood in the pelvic and abdominal cavities. This had escaped from a ruptured cyst of the fallopian tube. The fœtus exhibited was found in the pelvic cavity. The position of the cyst was such that it would have been an easy operation to open the abdomen and ligate and remove the cyst and ovary and cleanse the pelvic cavity. The fallopian tube involved is dilated except at the uterine extremity. The other tube is occluded at the fimbriated extremity; inflammatory bands derange the relations of the different pelvic organs. We have here the history of inflammatory processes changing the epithelial linings and relations of the fallopian tubes to the uterus and ovaries as predisposing causes of extra-uterine pregnancy.

Dr. Harris remarked that the hæmorrhage after conception, the peculiar location of the pain, and the pallor make the diagnosis an easy one. He had one patient that recovered spontaneously. The operation suggested by Dr. Parrish has been performed once successfully. Dr. T. G. Thomas made the diagnosis and wished to operate, but the husband, a physician, differed in opinion and would not consent; that patient lived sixty hours after the accident. Dr. Playfair in his book advises the operation.

Dr. O'Hara saw the case early and could not make such a diagnosis. He saw no sign of internal hæmorrhage then. He thought of peritonitis or cellulitis. There had been no history of a cyst of the uterus. He did not see how a positive diagnosis of extra-uterine pregnancy could have been made at that time. The patient was certainly going to die, and he would approve of an exploratory operation.

Dr. Parrish remarked that Dr. O'Hara was perhaps right. He, (Dr. P.) was the only physician present who looked at the case in that light. All the others disagreed and had their reasons. If this diagnosis of a probable extra-uterine fœtation had been made early, before the accident, then when the acute symptoms supervened a quick diagnosis could have been made as to the cause of the pain. He described a fold of peritonæum found behind the uterus, and as the clot had the appearance of different ages, portions being yellow, he suggested that an extra-peritoneal hœmorrhage had first occurred under this fold, perhaps ten days before the intra-peritoneal hæmorrhage which was the cause of death.

Dr. Beates exhibited for Dr. Boardman Reed, of Atlantic City, N. J., a tumor of the uterus which the latter supposed to be an early stage of carcinoma, but no microscopic examination of the specimen had been made.

Dr. Beates reported the case of an infant which appeared well and hearty at birth but died in collapse on the third day. An autopsy revealed acute gangrene of the mucous surface of eight feet of the ileum; hæmorrhage had occurred into the intestine and was the immediate cause of death.

W. H. H. GITHENS, Secretary.

CHICAGO MEDICAL SOCIETY.

THE Chicago Medical Society resumed its regular meetings on the evening of the 15th inst., after a vacation of two months, and it is hoped the lively interest manifested will be continued. There was a large attendance of members, and the unusual spirit manifested will be productive of many valuable and interesting papers and essays before the close of the current year. The President, Dr. D. W. Graham, gave a short address of welcome in the most appropriate manner, and Dr. L. H. Montgomery recorded the minutes.

The first paper was an extensive one, being "*The History of Insanity in Chicago*," compiled from an analysis of 3,000 cases treated at the County Insane Asylum during the past twenty years, by Dr. S. V. Clevenger, special pathologist of the Cook County Asylum. The following is a brief synopsis of the paper:

Many things have interposed to baffle his endeavors to present an exact history of the medical progress of this asylum, giving statistical information, etc. For during the time prior to the great Chicago fire, which destroyed all the county records—and the paucity of asylum papers dating earlier than 1871, and also the seven years anterior to 1878—the asylum books were kept in a very careless manner, blotted, smeared, and full of errors. At this time the superintendent assuming charge had transferred to new pages all the case histories obtainable from previous records, and the fuller details obtained from friends of patients. This mass of information has afforded the material for this article, but in analyzing cases earlier than 1878 many sources of error must be eliminated before they can be made available statistically. In *ante bellum* days there was no county asylum. At that time and during the year 1866 insane persons were treated in the wards of the poor-house, also subsequently and during the period from October 1, 1867, to January 10, 1871. Some very comical stories are told of this *regime*, from which the writer deduced that the welfare of a patient was insignificant alongside the chances of stealing a dollar or so, in those times. January 1, 1871, the poor-house had outgrown itself, and the necessity for differentiating insanity from pauperism had become apparent enough to justify the erection of a large brick building, capable of accommodating 300 patients.

A new superintendent was appointed who started out with true medical animus to better the condition of the insane, but the book keeping and records were not satisfactorily kept. January 1, 1875, a change was made in the appointment of superintendent who served until January 1, 1878, at which time the present incumbent's term began, and who has served uninterruptedly to this date.

The writer had incorporated some sixteen different tables in the paper, showing the number of admissions each year (male and female), recoveries, improved, unimproved, sent to the State Hospital, died, unknown, also the duration of residence in asylum of male and female patients, occupations, maximum per cent., minimum per cent. and mean per cent. of those who recovered, improved, died, etc., being very comprehensive and complete in these details, besides a table showing the psychosis of patients admitted during the fiscal year ending August 31, 1883 (re-admissions included), which to elaborate upon without giving the figures complete or in full, might do the author an injustice. Suffice to say that in comparing the figures with some writers in medical journals there is much unnecessary cavil at the term "recovered" as used by asylum statisticians. One reason for this probably is that where 100 can not be obtained in footing up any table requiring it, differently based calculations without all the factors will require additional study and greater chance of error.

The author quoted figures of the Californian asylum at Napa, showing the increase of insanity in that State from 1 to 833 persons in 1860, to 1 to 388 in 1880, and that in this proportion there will be one

insane person to two sane in the year 2000 in that State. However this apparent result occurs in all new countries. Just so it is with the Chicago insane, the proportion of whom to the population is somewhere in the neighborhood of the California figures of 1880 (1 to 383), as there is a great influx of paupers from Europe into Chicago each year. The statistics of the Kankakee and Elgin asylums so far as they relate to Chicago insane, should form an integral part of future estimates in connection with our county asylum in arriving at an idea of the proportion of insane in our city population, with their death and recovery rates. The paper concluded with the exhibition of a number of hypertrophied brains and hearts; one specimen, the heart of a woman weighing 24 ounces and correspondingly much larger, also a brain weighing 57 ounces, the "pons" of which weighed 4 ounces and unusually developed, was that of a Swedish physician, who, when alive, was unusually intelligent.

Dr. J. G. Kiernan reported another case of "Insanity from quinine," in addition to his published cases of two years ago, viz.: R. B., aged thirty-eight, has a sister epileptic; a maternal grandmother and a maternal aunt died from "rush of blood to the head." The patient resembles the maternal side of the house in appearance and disposition. He has never been able to take even a small quantity of beer for fear of affecting his head.

He was recently attacked by fever of a quotidian type, having come from a malarious district. Upon the advice of a fellow workman, he purchased and took ℈i of quinine sulphate at a dose. In an hour thereafter he was violent and destructive, smashing furniture purposely. At this stage his friends called Dr. K———. There was a wild purposeless violence, but no delusion or hallucination present. He was very incoherent and hilarious. This condition disappeared in two hours, he having meanwhile been given a hypodermic of conine, which controlled his movements. A second dose of the quinine led to exactly the same results, and its ætological influence was therefore clear. Since disuse of the quinine there has been no further psychical phenomena. A case of transitory fury due to quinine, was reported in the *New York Medical Journal* October, 1882, page 406, which is the only case in literature that we remember that tallies with this case reported to-night. Such cases as these are likely to become of medico-legal importance.

I have heard of three instances in which the use of quinine has been alleged as an excuse for certain escapades, *seemingly the result of intoxication.*

Dr. Clevenger asked if there was not some predisposing or exciting cause in the case? Answered, that all the cases had a hereditary or neurotic taint.

Dr. R. H. Engert knew a man in Mississippi to die from the effects of a single (large) dose of quinine, but did not know the quantity taken. The patient became violently delirious and succumbed.

Dr. E. Andrews offered a resolution which was adopted, directing the chairman to appoint a committee to confer with the Directors or the Public Library on the subject of increasing the medical department of the library.

Adjourned to the first Monday in November.

AMERICAN ACADEMY OF MEDICINE.

The Eighth Annual session convened in the building of the New York Academy of Medicine, New York, on Tuesday afternoon, October 9th, at three o'clock, the President, Dr. H. O. Marcy of Boston in the chair. After the transaction of routine business, the applications for fellowship approved by the council were read by the Secretary and balloted for by the Academy. The following gentlemen were admitted into fellowship during the entire session: Drs. A. C. Kemper, Cincinnati, O.; John Green, St. Louis, Mo.; Surgeon-General C. H. Crane, U. S. A., Medical Director A. L. Gihon, U. S. N., Washington, D. C.; J. Corbin, E. F. Mordough, Brooklyn, N. Y.; E. B. Bronson, L. P. Walton, R. P. Lincoln, P. A. Morrow, Herman Knapp, New York; P. J. Farnsworth, Clinton, Ia.; E. V. Stoddard, Rochester, N. Y.; Z. B. Adams, Farmingham, Mass.; F. L. Dubois, Tromar J. Smith, Bridgeton, N. J.; E. L. Dunster, Ann Arbor, Mich.; J. K. Weaver, Morristown, Pa.; W. T. Clute, Schenectady, N. Y.; J. A. Stewart, Baltimore, Md.; A. Brown, Hellertown, Pa.; F. H. Gerrish, Portland, Me.; J. E. Emerson, Detroit, Mich.; E. Hartshorne, Philadelphia; J. H. Patzski, St. Augustine, Fla.; and W. S. Todd, Ridgefield, Ct.

The first paper of the afternoon was that of A. D. Rockwell, of New York, entitled "The Late Dr. Geo. M. Beard—a Sketch," in which he endeavors to show rather what Dr. Beard *was*, than what he did. He showed him as a man of zeal and industry, yet ready at any moment to lay aside his work and listen with untiring patience to the conversation of anyone. One of his most striking characteristics was his humor, and to this was largely due his reputation for eccentricity. Many instances in his life were cited to prove the author's statements.

The next paper was by Dr. Benjamin Lee, of Philadelphia, on "The Value of an Acquaintance with Botany as a Preliminary to the Study of Medicine." He deplores the present low grade of requirement for medical students, and the dropping of every topic but the actually medical, and especially the study of botany. He then entered into a historical study of the labors of the early botanists in America, more especially of those connected with the University of Pennsylvania. The earliest work on our American plants was published at the Green Dragon, outside Temple Bar, London, about two centuries ago, which was chiefly valuable in describing a combination of lime juice with the spirit of sugar, and which they call "punch." The value of our native materia medica was pointed out and the deplorable ignorance everywhere existing with regard to it. He urges the return of the study of botany to our medical schools, since were the study not begun by this time it probably would not be entered upon at all.

Dr. Traill Green, of Easton, read the next paper, entitled "The Imperfection of Technical Studies as a Means of Mental Culture." The author proved by citation of examples that the sciences are subjects with which physicians have been familiar for a long time, indeed they were among the men who made

them sciences, and hence they are able to speak with authority upon the subject. If the so-called scientific training embraces the only studies by which men could be educated there could have been no truly educated men before the birth of modern science. Sir Isaac Newton's learning was nothing until he discovered the law of gravitation, nor was Harvey a learned man until he discovered the circulation of the blood. Among lawyers, Coke and Sir Matthew Hale; among theologians, Philip Dodridge and Jeremy Taylor; among physicians, Boerhave, Sir Astley Cooper, Sir Henry Holland and Dr. Watson, among others, were uneducated. Even in technical schools the teachers are recognizing the need of general training, and they are now asserting that such schools are post-graduate schools, and that those entering should have a preparatory training. The advocates of the assumed modern method of mental development are apt to jump at any little statement which they think is an admission upon their side, on the part of education, as witness the case of President Eliot and more recently that of Charles Francis Adams, Jr., each of whom afterwards denied the interpretation placed upon their remarks, which is confirmed by the reading of their address in its entirety. The old curriculum is adapted to the cultivating of the mental faculties, the *educating* of man, while the cultivation of single capabilities do not make a well rounded man. It has been stated that college professors in time become one-sided, and if that is the case among men who in ithe start receive a general training how much the more would it be apt to be so in the specifically trained.

Dr. Charles McIntire, Jr., of Easton, follows with a paper entitled, "Is it Fair? A study of the Comparative Political Position of the Medical Profession of the United States." This paper assumes that law, theology and medicine were alike learned professions and consequently should be considered as worthy of dignity. But while in theology and in law, the members of each profession were guardians of their own ranks, the privilege was denied to medicine, a condition of things thought not to be fair. Among the reasons adduced for this condition, the author places the nature of our calling and the indifference of the profession as the chief ones.

The last paper of the afternoon was by Medical Director A. L. Gihon, U. S. N., on "The Higher Plane in Medicine."

He called attention to the fact that the regularly graduated M. D. was not necessarily a physician in its true sense. A "doctor" in the people's phraseology includes extremes of possessions and pretentions, and the profession themselves are largely to blame for the elasticity of the classification. To the many a good fee is of more importance than a valuable increment to our knowledge. The taking of students in offices to enter upon the study of medicine before even there is a knowledge of knowing how to study; the mingling of the elementaries and the applied in our medical schools by which a man soon learns to remember recipes and disregard the basement facts of chemistry and materia medica of the ingredients of the prescription, produce men for whom the profession and the profession only are to blame. Many instances were given, taken from the examination papers of physicians applying for entrance into the Naval Medical Service to show the utter unfitness of the examinee to understand the meaning of the words much less to comprehend their proper use. It is not only desirable that there should be a preparatory training but essential. The very language of anatomy, even as now taught, is incomprehensible without such training, and the lack of such preliminary knowledge is an inpenetrable barrier, as long as the ignorance remains, to his advancing to the higher plane of professional life. But all thorough preparatory training grades and extended medical courses, severe examinations by disinterested boards are not enough unless the very atmosphere breathed by the student is saturated by preceptor, professor and practitioner with the thought that the service of the medicine is more than a fee-taking prescription-giving routine. If it is impossible ever to arrange that all shall enter upon this higher plane, there should speedily be arranged a means of distinction between the two classes.

The afternoon being far spent, the discussion of these papers was deferred until the morning session.

The evening session was devoted to listening to the President's address, having for its theme "The Recent Advances of Sanitary Science the Relations of Micro-Organism to Disease."

He began by referring to the "unexpected honor which one year ago your suffrages conferred upon me in electing me to preside over your counsels.

The academy owes its existence to a wide spread spontaniety of feeling, that an organized effort should be had to elevate the standard of medicine. The success of our efforts should not be judged by our own feelings, but must be left to the criticism of those outside our number. The history of medicine, studied in a broad, philosophic spirit, is of interest and profit, and its evolution with the other sciences marks an era in civilization. Differences of opinion have and will continue to exist, but other things being equal, the better trained and armed soldiery wins. *Rationalis ne medicini* exists alone without rivals, while *isms* and *pathies* will cease to be. The duty of the physician is two-fold; first the prevention; the cure occupies the second place. Sanitation can hardly be called a science as yet; many of our modern appliances were known and used by those of ancient times. Hippocrates saw light in the same age in the history of Greece that gave birth to her famed poets and philosophers, yet he formulated the fundamental principles of "pure air, pure water, and a pure soil."

The discussion of the problems of life are not only instructive but fascinating. Mohammedism at least has the virtue of instilling principles of cleanliness and careful living. The plagues of the middle ages and the devastations following the crusades were but preventable filth diseases.

The vital processes in their sway over matter hold the balancing between waste and repair, and this hypothetical equilibrium is perhaps the best definition of health. The safe removal of waste, worn out

material is one of the chief factors of sanitary science, and its complexity varies directly with the number of individuals gathered together, such as is possible in the presént age of steam. As we cannot escape from our atmosphere, a consideration of its impurities naturally first claim our attention. The rates of oxygen and nitrogen is somewhat stable; the effect of carbonic acid has been greatly exaggerated, its ill effects being chiefly seen when oxygen is withdrawn from the air for its production as in combustion or respiration. The influence of oxygen must be carefully considered, since it is a great oxidizing agent for decomposing organic matter.

The foreign ingredients of the atmosphere are very various, and may be carried great distances by aerial currents. African organisms have been found in in the air of Berlin. Air, without the presence of motes and dust, will not reveal the passage of a beam of light, as shown first by Tyndal. Amid these motes are to be found many septic organisms, the knowledge of which and their exclusion from wounds has marked an era in surgery, and is helping in the more difficult problem of the germ theory of disease.

Impurities exist in water as well as in the air; mineral constituents not only but organic material which may or may not be harmful. As when treating of the air the ever present moisture was an important factor, so in water, soil pollution must ever be taken into consideration. The importance of the study of the sources of septic poisoning can be inferred from the fact that in the late war zymotic diseases killed more than bullet or bayonet. A blind man, no matter how well armed, is a dangerous ally. How can one who is blind to the condition direct as to the prevention of disease? There must be an atmosphere reasonably free from defilement of organic waste, a system of sewerage which shall continue in a steady flow from beginning to end, and a pure and ample water supply.

"Be it our bounden duty as physicians to disseminate to the masses proper instruction in the cardinal virtues of right living, and to demand from our government wise sanitary laws, both State and national, in the enforcement of which every house shall be builded and maintained as sanitarily safe as architecturally; rich and poor alike abundantly supplied with pure air and water, and have their habitation upon an uncontaminated soil."

At the conclusion of the address Dr. Marcy had projected on the screen a number of slides illustrating the character of dust as found in the air, the impurities of water, bacteria, etc.

After the address, which was listened to by quite a number of invited guests, the fellows held their first subscription collation under the rule adopted last year, and had a very pleasant social time.

Session of Wednesday morning. Shortly after 10, the Academy was again called to order. The treasurer's report was read and referred to an auditing committee; the balance on hand amounting to $238.09. The secretary reported that the council had nominated Dr. J. Marion Sims, of New York to honory fellowship. The Academy accepted the nomination and elected Dr. Sims.

The Nomination Committe appointed yesterday suggested for officers for the ensuing year:

President—Dr. Benjamin Lee, Philadelphia.

Vice-Presidents—Drs. A. L. Gihon, U. S. N.; Nathan Allen, Massachusetts; G. F. Shrady, New York; E. J. Birmingham, New York.

Secretary and Treasurer—Dr. R. J. Dunglison, Pennsylvania.

Assistant Secretary—Dr. Charles McIntire, Jr., Pennsylvania.

Place of next meeting, Baltimore, Md.

The report was rceeived and the suggestions adopted.

The first paper of the morning was that or Dr. L. S. Pilcher, of Brooklyn, entitled, "The Relation of Medical Journalism to Higher Medical Education in America." Before reading the paper Dr. Pilcher reviewed some of the papers of yesterday, criticising adversely their conclusions, and gave a different value to the words "higher medical education" than the usually accepted one. His paper showed that during the past twenty-five years medicine had been in a state of fermentation. With modern facilities of travel and communication, provincialism is impossible. It has been a period of scientific research, in which medicine has kept pace, and to the medical journals has been given the duty of gathering, examining and starting this work. The qualification of a physician will be decided by two things, both from the people, first, legislative enactment, and secondly, (and the more powerful) public opinion. That system of education will prevail that will produce men who will be acceptable to the people. In this higher education medical journals aid.

Dr. Pilcher's paper was discussed by several of the fellows whose conclusions were different from those of the author of the paper upon several points.

The next paper was by Dr. J. Cheston Morris, of Philadelphia, on "The Milk Supply in Large Cities." The great essential of our Aryan civilization is milk; its importance has been shown from the Sanscrit mythological period until to-day. It is of use to the child, the invalid, and the person of health. Nothing can be done by art to improve it; its best condition is as it comes from the cow. And a great problem is, how can it be so supplied to large cities. The plan suggested was one that has to some extent been adopted in several of our cities. The cows are carefully kept and well fed, the milk is cooled and strained, shaken to thoroughly mingle cream and milk, put into bottles, corked, and sealed by a strip of paper giving the name of the farm and the date. These are put into boxes, shipped to the city and distributed to the consumer, the milkman gathering up the jars of the day before. The importance of the subject may be seen as at the present rate of supply, Philadelphia expends about $100,000 a day for milk.

The next paper, by Dr. A. D. Rockwell, of New York, was on "The Exact Value of the Electrolytic Method." The author in an inductive manner from a number of cases showed where we might be able to succeed, and in what we would be apt to fail in the use of electrolysis in surgery.

Dr. Dunglison, on behalf of the Committee on Laws of Medical Practice in the United States and Canada, read the annual report of the committee' showing, upon the whole, progress in the efficiency of such laws.

A paper on "The Importance of Cleanliness in Surgical Operations," was read, in the absence of the author, Dr. R. S. Sutton, of Pittsburg, by the Assistant Secretary, who states that while it had the same title as a paper submitted by Dr. Sutton before the American Gynæcological Society, it was an entirely new paper. While there are germs, bacteria, etc., infesting air and animal organism, they are not all noxious, but because some are, we must fight against all. That cleanliness in every detail would accomplish as much as the antiseptic methods, indeed the success of the antiseptic method was due greatly to the cleanliness.

Dr. P. D. Keyser read, in the absence of Dr. L. P. Bush, of Wilmington, Del., the last paper of the session, entitled "Some Thoughts on Vaccination." Vaccination is a great boon, yet there are many objectors, many of whom do not properly understand the facts of vaccination. For example, it was gravely asserted by a practitioner that vaccination, during an epidemic of small-pox, would increase the liability of the person vaccinated to be attacked by the disease. Then again, many who have the operation performed upon them have but spurious results, and relying upon this, are attacked and lose faith. The subject should be one of education among the people, and public vaccinators should be appointed, with salaries, to see that all are properly vaccinated.

At the conclusion of the paper, Dr. Marcy made a short but eloquent valedictory, and appointed Dr. Keyser a committee of one to induct the President elect.

Dr. Lee in a few fitting words took the chair, and appointed as additional members of council, Drs. C. C. Bombough, of Baltimore; Wm. Elmer, Jr., of Trenton; and J. Cheston Morris, of Philadelphia.

The Academy then adjourned. The meeting was the largest in its history, and of full and sustained interest from the start.

BOOK REVIEWS.

A Complete Hand Book of Treatment Arranged as an Alphabetical Index of Diseases. By Wm. Aitkens, M.D., F.R.S. Birmingham & Co.: New York.

This book is made up of those portions of the chapters of "Aitkens' Science and Practice of Medicine" which describe the treatment of diseases. It is arranged alphabetically according to the names of the diseases. A brief definition of each morbid affection is given before the treatment is detailed. The work from which this has been compiled is so well known and has been so thoroughly established as an authority, that comment upon its contents is unnecessary. The book may be found useful, as keys, dictionaries, and indexes are, but like them, cannot be considered a treatise upon the subject.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Eighty-Fifth Annual Session. April, 1883.

The first fifty pages of this volume contain minutes of the annual and special meetings and the reports of the various officers and committees. The president's address is by Wm. M. Kemp, and following it is an admirable address upon Medical Bibliography, by John S. Billings. The report of the Section of Surgery is by Oscar J. Coskery, in which he attempts to "strike the balance" of present opinion upon the subjects of Gastrostomy, Splenectomy, and Nephrectomy. Dr. Richard H. Thomas made the report of the Section on Practice. This consisted of a carefully prepared and laborious paper, on the Influence of Season and Weather on the Death Rate from Diptheria in Baltimore. His conclusions will be of interest, and we will, therefore, copy them here:

1. "While the weather alone does not regulate the absolute number of deaths from diphtheria, it has an important hearing upon the rise and fall of the violence of the disease, although temporary fluctuations occur independently of it."

2. "*Temporary changes* in the weather *has but little* effect, but a *continued prevalence* of certain kinds of weather do cause a rise or fall in the mortality from diphtheria."

3. "The conditions favorable to a rise are, low barometer, low winds, especially from the east, high temperature with high humidity, and heavy or continued rainfall."

4. "The condition favorable to a fall are, high winds, especially from the west, low humidity with high temperature, or high humidity with low temperature and (generally) a high barometer."

Dr. Wm. T. Howard, in the report of the Section on Obstetrics and Gynæcology, first considers Trachelorrhaphy, its present status, the indications and contra-indications for it, Prophylactic and preventive measures, Primary Trachelorrhaphy. He then describes several cases of Vesico-Vaginal and Utero-Vesico-Vaginal Fistulæ. In the subject of Obstetrics, he calls attention to Axis-Traction forceps and describes Tarnier's forceps.

Under the heading, Report of Section on Materia Medica, is a paper by T. Barton Brune on Urinary Chemistry, in which he briefly describes all the more important advances in urinary chemistry made during the year. In the next article Dr. John S. Lynch describes his own tests of carbolic acid as an antipyretic, and calls attention to rubus procumbens in diarrhœa and dysentery. In regard to carbolic acid he says:

"I have used these doses in all kinds of fevers that have come under my notice during the last three years, and while I cannot say that it never fails, I think I can say positively that it fails less frequently than any other antipyretic with which I am acquainted, except, of course, the cold bath." His favorite prescription, especially when the pulse is very frequent, is one of carbolic acid, tincture of aconite root and glycerine, in which there are four or five grains of the first, about four drops of the second and

a teaspoonful of the last in each dose. In typhoid fever he regards it as especially useful as it keeps the temperature nearly normal and seems to prevent diarrhœa and tympanites.

Dr. J. Robert Ward makes the report of Section on Sanitary Science. Dr. T. S. Latimer in the report of Section on Anatomy, Physiology and Pathology describes the experiments of Chittenden and Ely on the influence of peptones and certain inorganic salts on the diastatic action of saliva. Also, Dr. G. L. Walton's experiments with methyl-kyanethine ; the experiments of Ringer on the influence of different constituents of blood on contraction of ventricle ; those of Brunton and Cash on the influence of heat on the muscles poisoned by veratria. The observations of Eckert on relation of blood-pressure to age are also given, and brief mention made of Dr. Whitfield Ward's opinion of the function of the velum and uvula, and the third blood corpuscle of Norris. The observations of L. C. Wooldridge on the relation of the white blood corpuscle to coagulation, and Gamgee's ideas upon the essential nature of secretion, are mentioned.

In the Section on Psychology, J. W. Chambers describes cases illustrating subcutaneous nerve stretching in the treatment of sciatic neuralgia. Dr. A. Friedenwald, Chairman of the Section on Ophthalmology, Otology and Laryngology makes a report for the Section. A paper on Laryngeal Stenosis, by H. C. McSherry follows this. An abstract of the next paper, by H. Newell Martin, on the Direct Action of Ethyl Alcohol upon the Heart has already appeared in this journal.

The next is an interesting paper on the Sewerage of Cities, by C. W. Chancellor. Some Forms of Laryngeal Paralysis are described by J. D. Arnold ; a case of Dexiocardia by S. C. Chew. The prone position during operations upon the jaw is discussed by L. M. Tiffany ; hypnotism, by G. H. Boyland ; St. George W. Teackle relates some facts in regard to a a case of spontaneous cow-pox that occurred in Baltimore county, and experiments with the crusts from it.

The paper following contains Dr. J. N. Mackenzie's remarks on Naso-Aural Catarrh and its Rational Treatment. Malarial Fever in Puerperal Women is the title of the last article, which is by P. C. Williams.

NECROLOGY.

CRANE, CHARLES HENRY, M.D., Surgeon General of the United States Army. Was born in Rhode Island in 1825 ; died suddenly at his residence, in Washington City, October 10, 1883. He received his education at Yale College, where he graduated in letters in 1844. He then commenced the study of medicine, and graduated M.D. in the medical department of Harvard in 1847. Dr. Crane was commissioned Assistant Surgeon in the United States Army, February 14, 1848 ; served with the Second United States Artillery in the Mexican war ; was in the Florida war against the Seminole Indians to 1852 ; with a battalion of the Second United States Infantry in an expedition against hostile Indians in the summer of 1852 ; with First United States Dragoons in an expedition against hostile Indians in the summer of 1852 ; with First United States Dragoons in expedition against hostile Indians, and in protecting emigrant trail in Oregon ; distinguished in an expedition against the Indians near Rogue river, Oregon, 1856 ; on the Pacific coast to December, 1856 ; attending surgeon examining recruits and assistant to the Medical Purveyor, New York city, to September, 1859 ; accompanied Gen. Scott to the Pacific coast, September, 1859 ; was promoted to Surgeon, United States Army, in May, 1861 ; was Medical Director, Department of the South, to July, 1863 ; Medical Inspector of Prisoners of War, August to September, 1863 ; executive officer in office of the Surgeon General, Washngton. D. C.; Colonel and Assistant Surgeon General United States Army, July, 1866 ; brevet Lieutenant Colonel and Brigadier General United States Army for faithful and meritorious service during the war, and was made Surgeon General, July 3, 1882.

Gen. Crane had been sick for about three weeks, but was able to go to his office at intervals up to about a week ago, since which time he has been confined to his house. He was an officer of great executive ability, affable and courteous to all having business with his office, and universally beloved by the clerks of his bureau.

Surgeon General Crane was a man of fine figure, and until his late sickness was in robust health. His duties have been in Washington since the war, where he has a host of friends in social and military circles.

He was an honorary member of the "Medical Society of the District of Columbia," which, at its meeting on the evening of the 10th inst., passed the following resolutions :

"WHEREAS, The Medical Society of the District of Columbia have heard with profound regret of the death of Dr. Charles H. Crane, late Surgeon General of the United States Army, and an honorary member of this Society ;

"*Resolved*, That in the death of Gen. Crane this Society, and the profession at large, have lost one of its ablest and most distinguished members.

"*Resolved*, That in the discharge of his official duties, his marked ability and devotion to everything connected with the advance of medical science, merit the highest commendation of his professional brethren.

"*Resolved*, That this Society tender to his family their heartfelt sympathy in their sudden bereavement."

Dr. Crane was one of the physicians at the death bed of President Lincoln, and his portrait is prominent in the well known picture of that sad scene. The Doctor leaves a widow and one child, a son. Funeral services were held at his residence, at 5 o'clock on the 11th inst. His remains will be sent to Rhode Island, and interred at Shelter Island.

J. M. T.